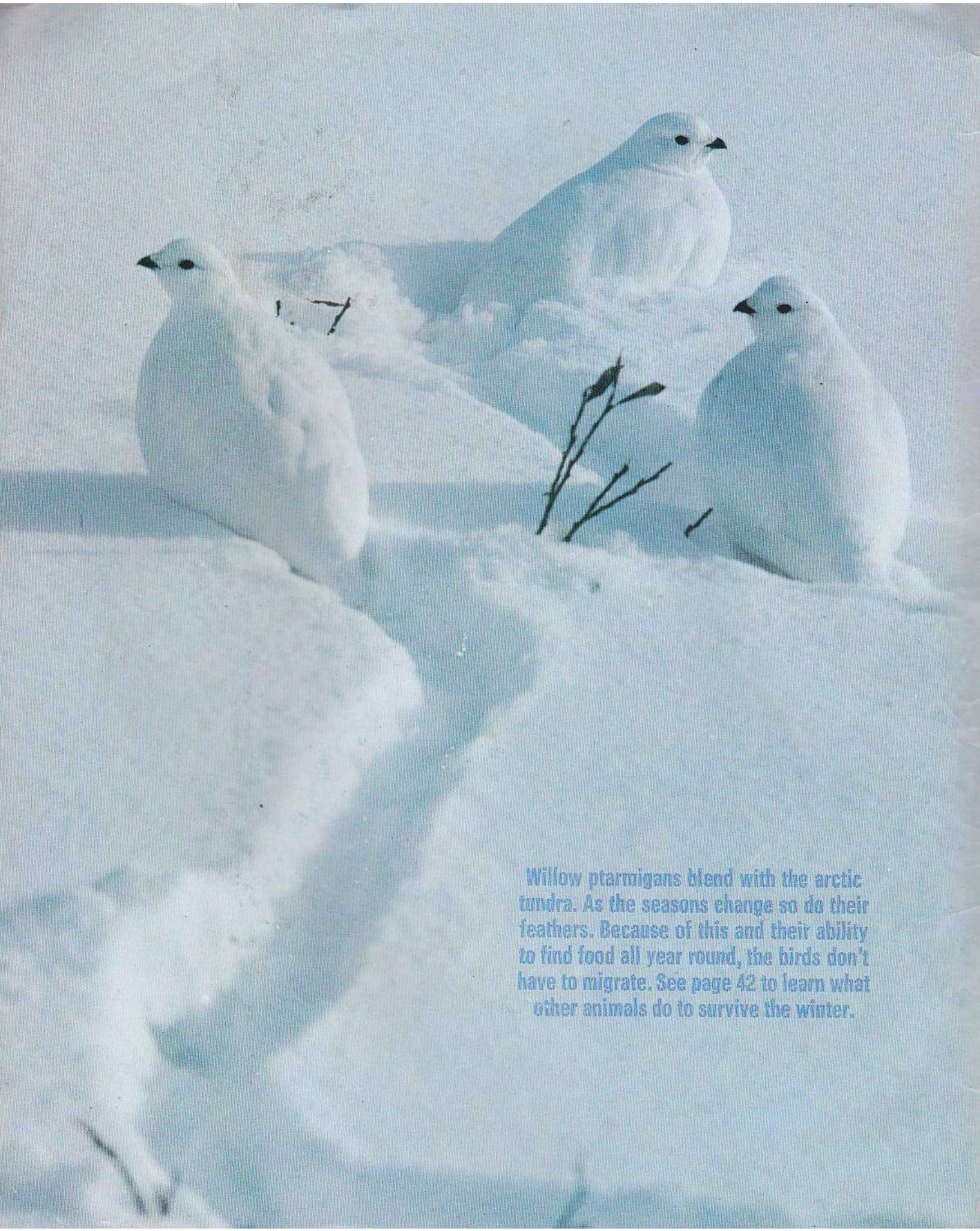
# Ranger Rick's nature magazine

December 1975

PUBLISHED BY THE NATIONAL WILDLIFE FEDERATION



Willow ptarmigans blend with the arctic tundra. As the seasons change so do their feathers. Because of this and their ability to find food all year round, the birds don't have to migrate. See page 42 to learn what other animals do to survive the winter.

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**Ranger Rick's Nature Magazine** is published monthly except June and September by the National Wildlife Federation, a non-profit corporation, 8925 Leesburg Pike, Vienna, VA 22180. It is a publication available only to members of Ranger Rick's Nature Clubs and not sold on a subscription basis. Membership annual dues $7.00. Foreign $8.00. Second class postage paid at Vienna, VA and at additional mailing offices.


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Printed by Fawcett Printing Corp., 1900 Chapman Avenue, Rockville, MD 20852.

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**Correspondence To The Editors** address to: Ranger Rick's Nature Magazine, 1412 16th Street NW, Washington, DC 20036.

**Unsolicited Manuscripts,** art work or photographs must be accompanied by self-addressed, stamped envelope if return is desired. Publisher can assume no responsibility for unsolicited material.

**Address Readers' Letters To:** Ranger Rick, 1412 16th Street NW, Washington, DC 20036.

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**General Correspondence** about wildlife stamps, nature merchandise, the National Wildlife Book Service, contributions, "Ranger Rick for Class and Club," a guide for teachers and leaders, and general conservation matters: National Wildlife Federation, 1412 16th Street NW, Washington, DC 20036.

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Cover credits:
Front—Flying Squirrel by William C. Weber
Back—Blue Jay by Dr. Martin Bruce/Tom Stack & Assoc.
Page 2—Ptarmigans by Stewart Cassidy

*RANGER RICK'S PLEDGE*

*I give my pledge as a member of Ranger Rick's Nature Club*

*To use my eyes to see the beauty of all outdoors.*

*To train my mind to learn the importance of nature.*

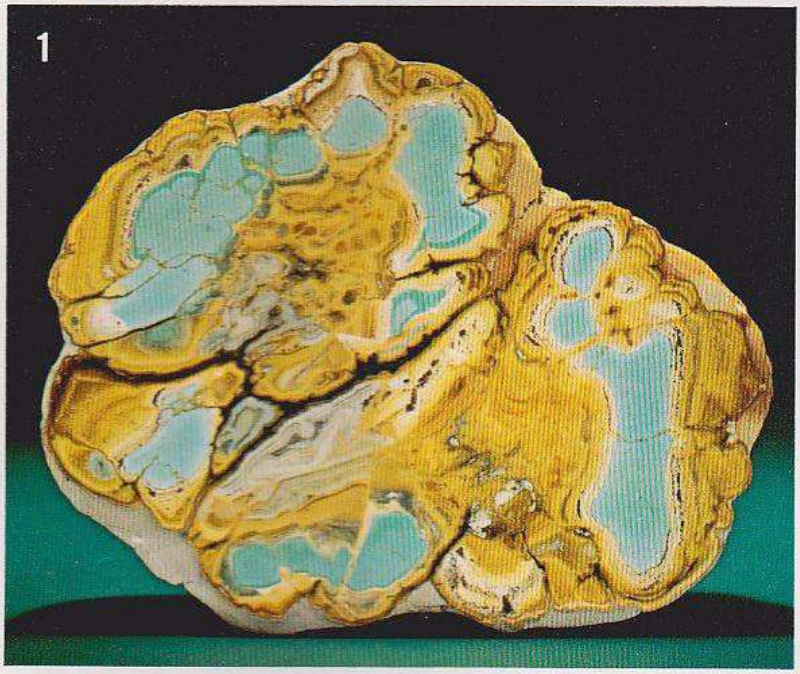
*To use my hands to help protect our soil, water, woods and wildlife.*

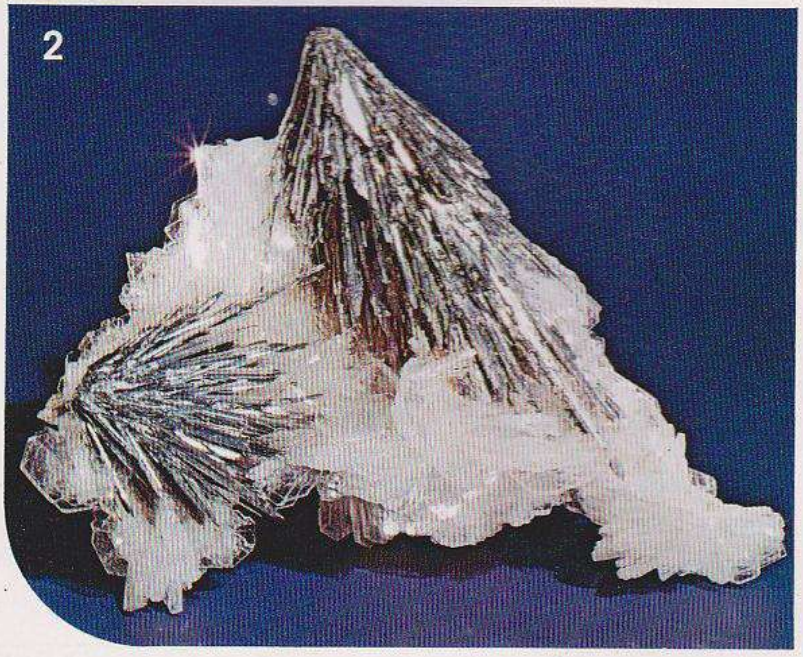
*And, by my good example, to show others how to respect, properly use and enjoy our natural resources.*

_____

*Your Name*

# ROCK ORNAMENTS




Photos by Lee Boltin

Imagine a very special kind of Christmas tree. It's an Earth Treasure Tree—decorated with rocks and minerals from inside the earth.

Each ornament is a different size, shape and color. Some are very rare—worth thousands of dollars.

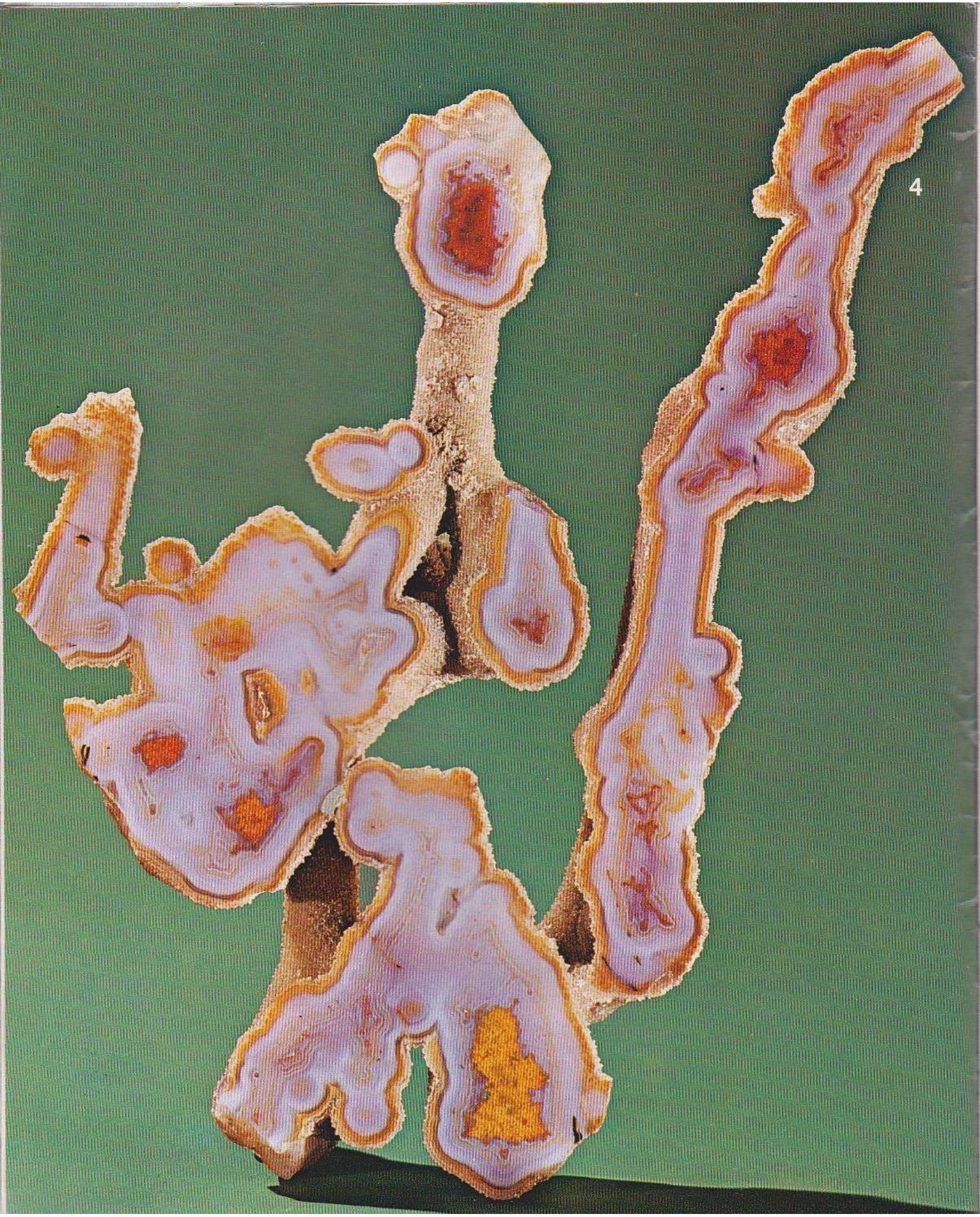
If you could hang just one of these ornaments on your tree, which would you pick?

1. This looks like a bird's eye view of a Utah canyon, where this ornament of variscite (VAR-eh-site) has been found.

2. Twin mountain peaks of shiny stibnite (STIB-nite) poke through a delicate crystal cloud. Some of the best specimens can be found in California and Nevada.

3. No rocks like this were found on the moon but this chunk of turquoise (TUR-koyz) does look as if it might have come from outer space. Turquoise has been prized by people for thousands of years. Today Indians of New Mexico and Arizona still use it in jewelry. Maybe one of your presents will be a ring decorated with turquoise.

*Please turn the page*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4. Every Christmas tree needs an angel or a Santa Claus . . . so here's one of agate (AG-it). See the brownish outer layer? This agate looked like a dead tree branch until it was sliced and polished to show its bands of color. Agate is one of the earth's most colorful and beautiful ornaments.

5. This lovely piece of malachite (MAL-a-kite) looks ready to hang on the tree. The best places to look for it are in Arizona, and Nevada.

6. An icy castle floats in a sea of purple. Could it be the home of Jack Frost? No . . . it's a formation of tourmaline (TOOR-muh-lin) crystals. Each crystal usually has six sides, and can also be colored pink or blue or green. What prettier ornament could there be than these fanciful sparkling turrets frosted like ice?

*The End*

# Merry Window Panes

by Candida Palmer

Drawing by Donna Sterman

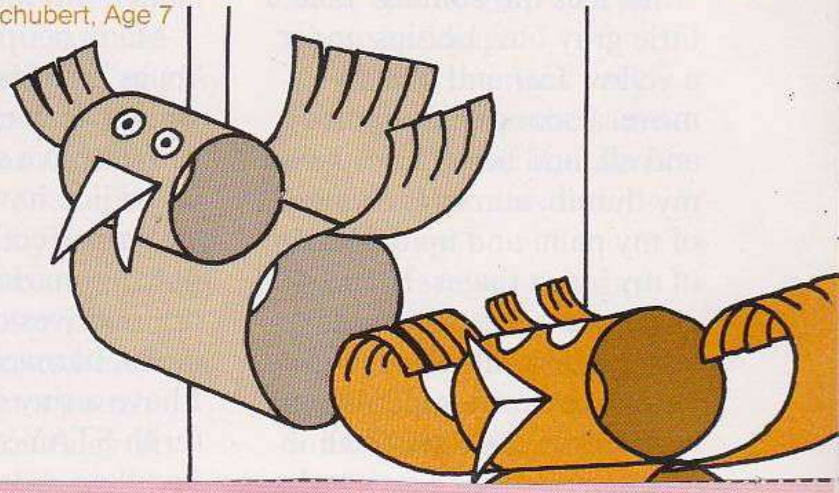
# Lick and Stick

by Louise Schubert, Age 7

◀ MERRY WINDOW PANES.
You will need: wax-paper sandwich bags, colored tissue paper, scissors, all-purpose white glue and a flat toothpick.

A wax-paper sandwich bag makes a perfect "window". Paste down the overlap at the opening to complete the "frame" edge. Cut or tear your design from the tissue paper.

To paste your design on the window: Pour about a teaspoonful of glue into a plastic lid. Thin with one or two drops of water, no more. With your finger, or using the flat edge of the toothpick, spread glue very lightly on the wax paper where your pieces of tissue paper will go. If you overlap pieces of tissue paper,



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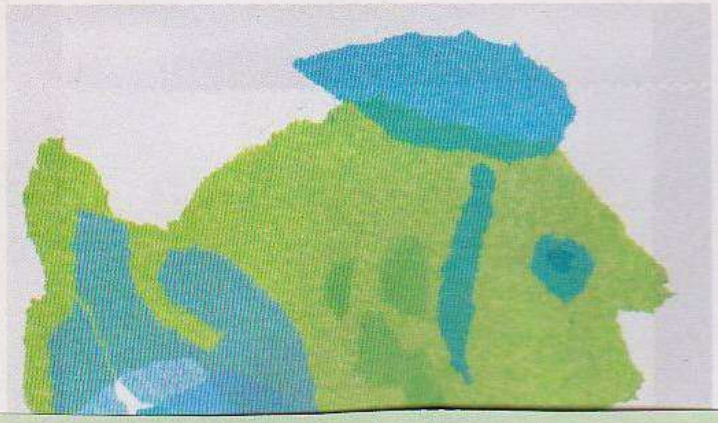

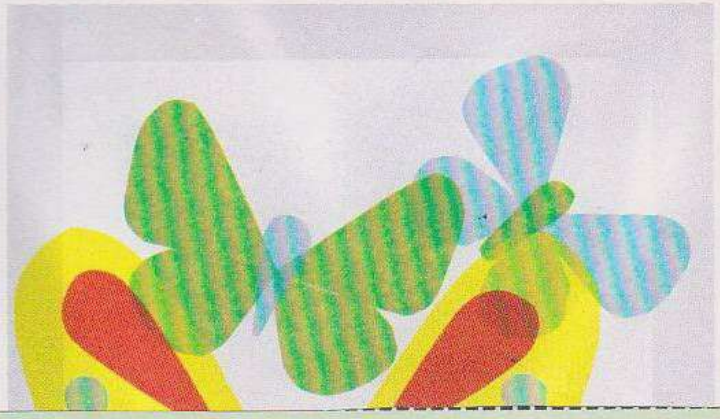

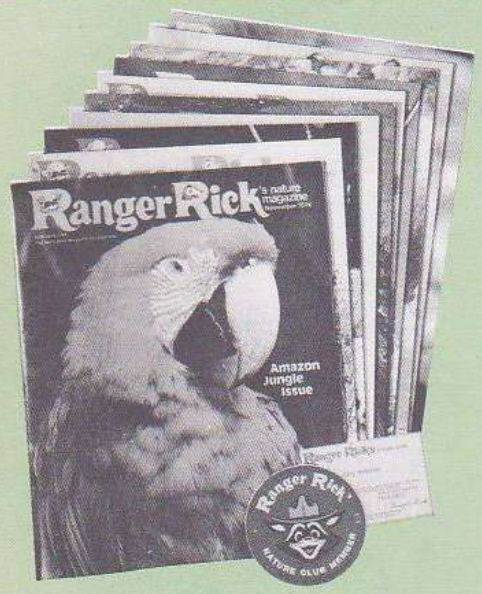


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the young people's membership program of the National Wildlife Federation, a non-profit, non-government conservation organization.

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# Lick and Stick

by Louise Schubert, Age 7

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Tape your "window" against a real window and it will glow like stained glass.

LICK AND STICK. ► You can make these simple animals to hang on your Christmas tree or from a mobile. Louise made them using gummed paper. You can find packages of colored gummed sheets in most variety stores or craft supply shops—or you can use any type of paper and all-purpose glue. Here's what you do:

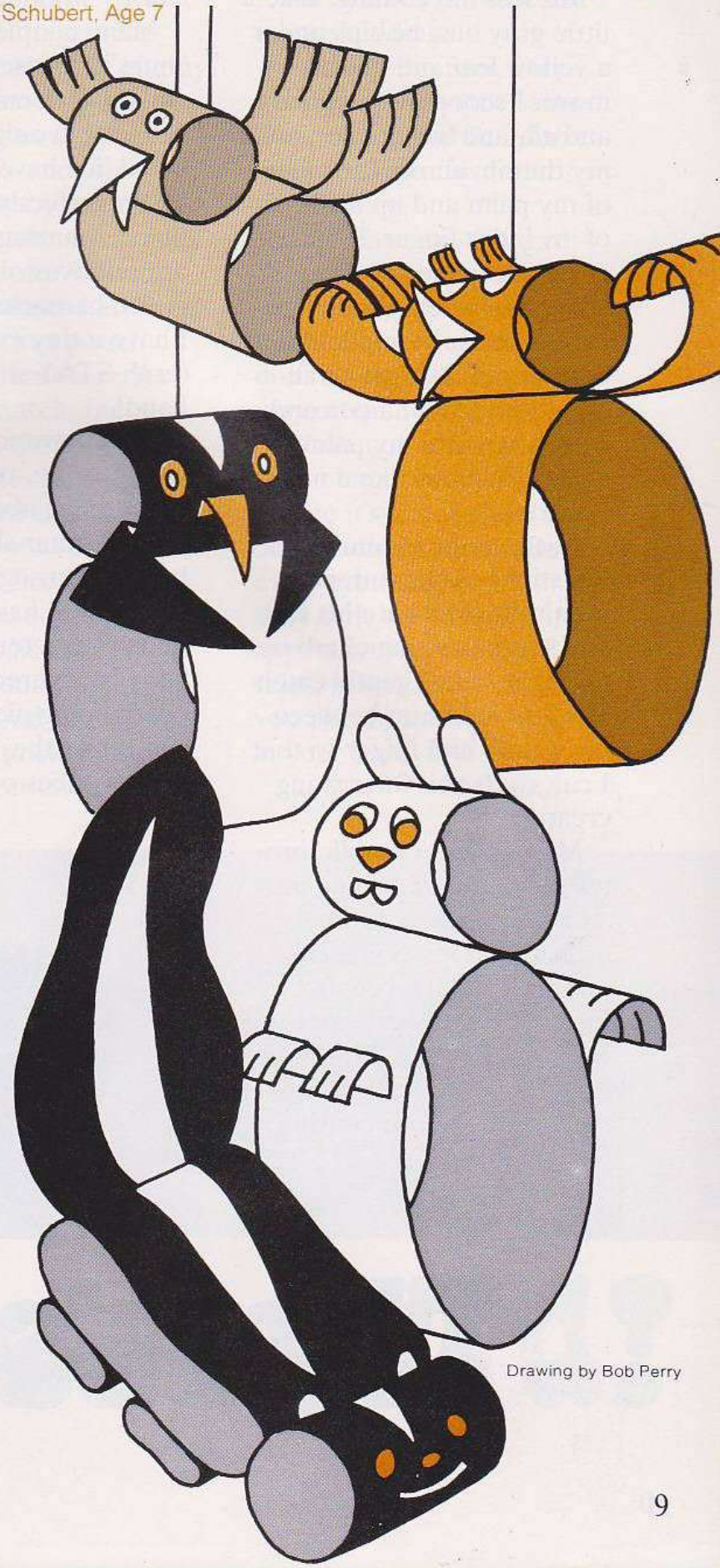
- Cut a strip of paper the length and width you need to form both the head and body of the animal.
- Lick, or glue, one end and roll it around to join the strip, forming the head.
- Lick, or glue, the other end and roll up to meet the head, forming the body. Press to stick.

This will work for any creature you want to make. For some, you form bigger circles; some may have to be flattened to form the particular shape of your animal (the skunk, for example).

Follow the directions below for the bird. Then you will see how easily you can make other animals.

- For wings: Cut a rectangle. Fold in half lengthwise and cut to make 2 equal pieces.
- Fold one piece in half and trim sides so you have a trapezoid shape.
- Cut fringe on end and curl by pulling a pencil over the paper. Lick and stick to bird's body.
- Trim the other piece to a smaller trapezoid, cut fringe and curl. Attach to rear end of body for tail.
- Cut another rectangle. Fold in half and trim to a narrow triangle. Lick, or glue, and stick to face for beak.

The End



Drawing by Bob Perry

by Geoffrey Willis

He sees me coming. Like a little gray bus, he zips under a yellow leaf and doesn't move. I scoop him up, leaf and all, and he scurries down my thumb, across the valley of my palm and up to the tip of my index finger. He pauses, antennae quivering. As I bring up my left hand to capture him, he suddenly coils into a little gray ball about the size of a pea and rolls down into my palm again. He looks like a midget armadillo!

**I wait. Soon he uncoils a bit, sticks out an antenna, then rolls over onto his feet** and starts the long climb up my right arm. I gently catch him and hold him between my thumb and finger so that I can study this interesting creature.

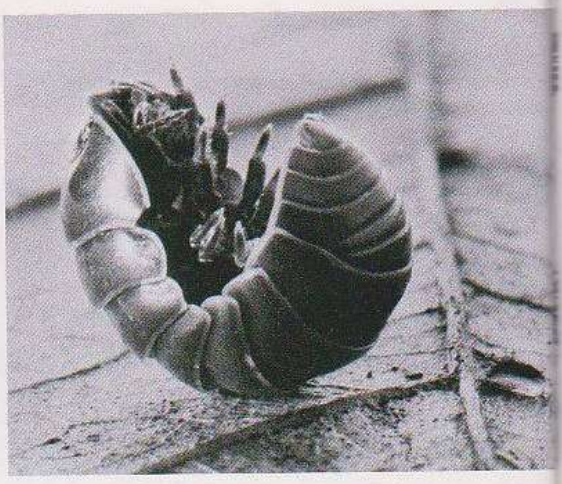
My midget armadillo protects himself by curling into a ball, just the way a real armadillo does. Some call him the pill bug, because he looks like a tiny gray pill when he curls up. But other people call my midget armadillo and his close cousins, the sow bugs, by another name—wood lice.

Many people think all "bugs" are insects—but wood lice aren't insects at all. Insects have six legs, and wood lice have fourteen—seven perfectly matched pairs! Amazingly, wood lice are relatives of shrimps, crabs, barnacles and lobsters. I have a tiny crustacean (cruh-STAY-shan) in my hand!

Most crustaceans, such as lobsters, are water animals. They move about in a hard, jointed outer shell and breathe through gills. A tiny wood louse has basically the same characteristics. Its body is covered with hard, overlapping pieces of shell, and it breathes through gill-like air tubes on its back legs.

Wood lice are crustaceans that have adapted to life on land, but they need moisture to survive. When the environment gets too dry, wood lice are in danger. **If exposed to dry air, they will die in about two hours!** They use special water finders—sense organs in the skin—to lead them to damp places. You can find wood lice in dark, damp places all around your yard—under rocks, flowerpots, bark and leaves.

My little wood louse is still between my thumb and finger. As his jointed antennae bend and point from side to side, he stares at me. I stare back and take my captive to a place he will find comfortable—under a large flat rock at the edge of my garden.



# There's an Arma

As I lift the rock, I see dozens of wood lice crawling in the soil. Two beetles scurry for cover, a slender, rust-colored centipede squirms under a twig, and a slug clings to the rock's underside. **I release my crustacean and he quickly joins the group.**

The ground is damp and pock-marked where the wood lice have been crawling. They are surface dwellers, not burrowers. But as they search for a meal of decaying plant material, they loosen the soil and let air into it. As they eat and digest and deposit wastes, they help produce dark, rich humus (HEW-mus). Humus is a natural fertilizer that helps your garden grow. And you can thank your tiny gardeners for doing their part!

I crouch down for a closer look before I put the rock back. In this little soil factory there are all sizes of gray lice, from as small as a pinhead to as big as a kidney bean. The tiny ones are babies, for a baby wood louse is just a miniature adult, fully formed except for its size. The female carries her developing eggs in a pouch between her front legs. As soon as they hatch, the babies are on their own.

As the babies grow they shed their hard shells. This allows them room to grow bigger. Wood lice eat these shed skins, but sometimes you can see pale cast-off skins lying around the damp areas. The wood louse's new skin or shell quickly hardens and is a protection until it too is shed. Finally the wood louse reaches full size and stops shedding.

I placed the rock very gently back into the same position I found it. I don't want to crush this little community.

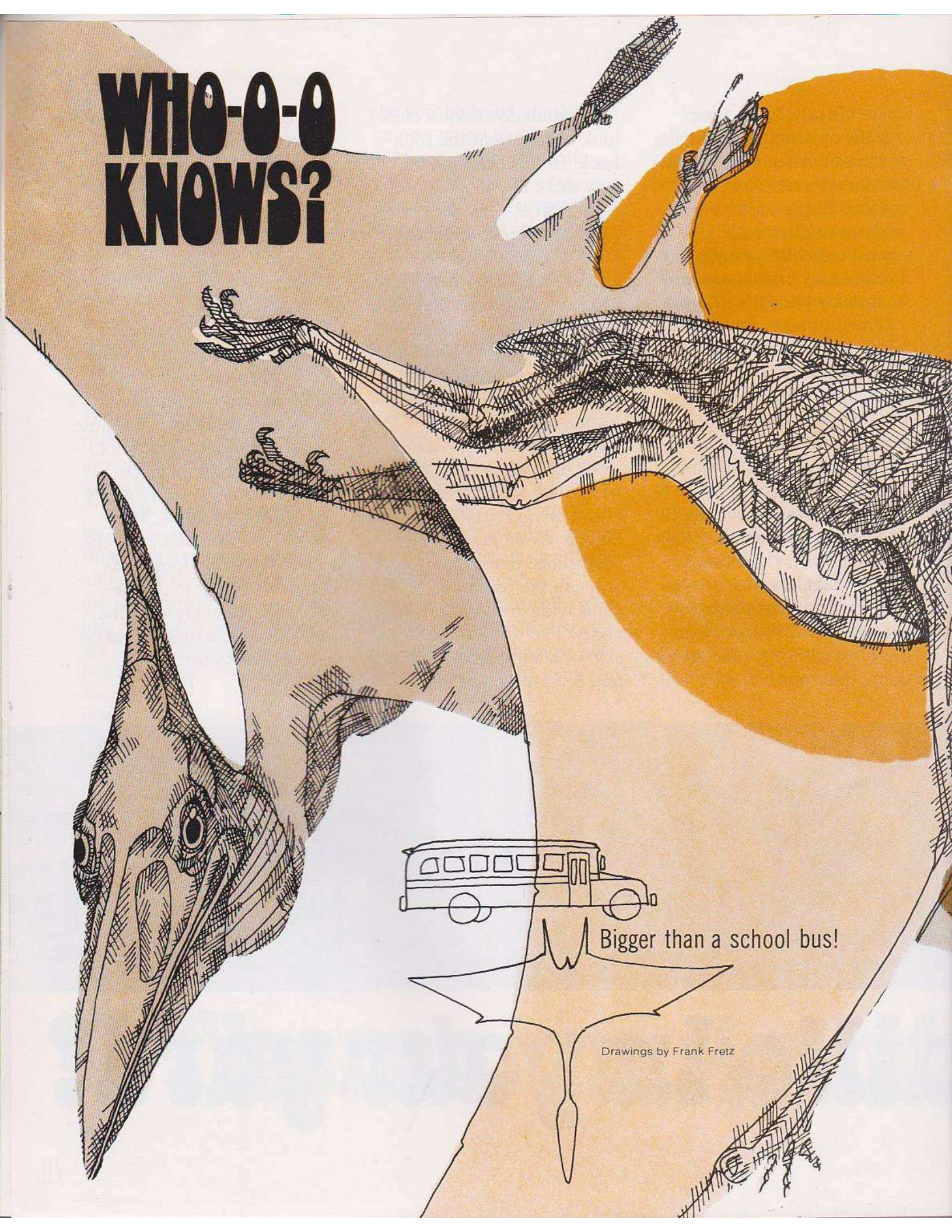
As I leave my tiny gardeners for another day **I wonder why the small, common creatures around us don't attract our attention very often.** Maybe it's because they are not as big and bold as the larger animals. Or maybe it's because we really don't bother to look. But every creature, including the busy little wood louse, has important work to do. Besides, it isn't every day that you discover a tiny armadillo in your backyard!

*The End*

Photos by Robert L. Dunne

# dillo in your yard!

# WHO-O-O KNOWS?



Bigger than a school bus!

Drawings by Frank Fretz

**Dear Wise Old Owl,**
**Do you think scientists will discover more dinosaur bones or fossils?**
**Lindsay Price, Age 11, Albuquerque, New Mexico**

Yes indeed! Some amazing fossils were recently dug up in Texas. They were wing bones from a giant flying reptile with wings longer than those on a jet fighter plane!

These Texas Giants are the biggest flying creatures ever discovered. Scientists call them pterosaurs (TER-ah-sores), which means "winged lizards." They lived on earth 70 million years ago, about the same time as the dinosaurs.

Like airplane-size bats, Texas Giants soared through the skies on leathery wings.

Were they hunting for food on the ground below? Some scientists think these pterosaurs ate carrion (dead animals) as vultures do today.

When they spotted a dead dinosaur, they would swoop down for a prehistoric feast. Their long, strong necks and storklike jaws were good tools for poking into a dead dinosaur's body!

But here's the big mystery. . . Did Texas Giants flap or glide? Some scientists think those huge wings were just too big and heavy to be flapped up and down. But then how did Texas Giants get into the air? Did they crawl to a high mountain ledge and leap into the air to soar like gliders?

Wise Old Owl loves a mystery! I wonder what color they were . . . cardinal red? bluebird blue? goldfinch yellow? I wonder . . . Did they fold their wings like accordions as they walked on their tiny legs? Did they use their claws to cling to ledges while they slept.

Yes, scientists are still finding fossils of dinosaurs and other prehistoric creatures. Millions and millions of fossils are hidden in the earth—just waiting to be discovered!

And who knows when someone (perhaps even you!) will find fossil bones from another amazing, mysterious creature like the Texas Giant?

Wise Old Owl

# NAPUT AND THE

by Robert H. Redding

Naput and his sister, Nadeen, laughed aloud. Old Kuraloo was funny. He pretended to be *nanook* the polar bear, and moved through the crowd crouching and growling. He wore a make-believe bear's head, but it looked very real.

It was *nalukatuk* time, the Feast of the Whale. The villagers gave thanks for whales caught at sea that spring. All the people gathered on the sandy beach to celebrate. They were dressed in their best fur parkas and mukluks. They tossed each other in blankets, told stories and danced the old dances. A great wooden bowl of *muktuk*, the thin, outer skin of the whale, was passed around. Each person ate a piece.

Naput sighed happily. He sank his teeth into a juicy piece of muktuk and chewed with gusto. He loved muktuk.

"You will become fat like a whale," said Nadeen disapprovingly. "You have already eaten half of *this* whale!"

"Ho!" replied Naput, with a full mouth. "This whale weighed 60 tons, little sister. If I ate half of him, that would be 30 tons. Impossible!"

"Not for you, fat brother," was the sweet reply, as Nadeen went flying down the road with Naput in hot pursuit.

"Take it back," he cried, "or I'll wash your face in the sea!"

"Never, fat brother!" came the shrieked reply, and the two raced on. They ran on and on, out onto the green tundra.

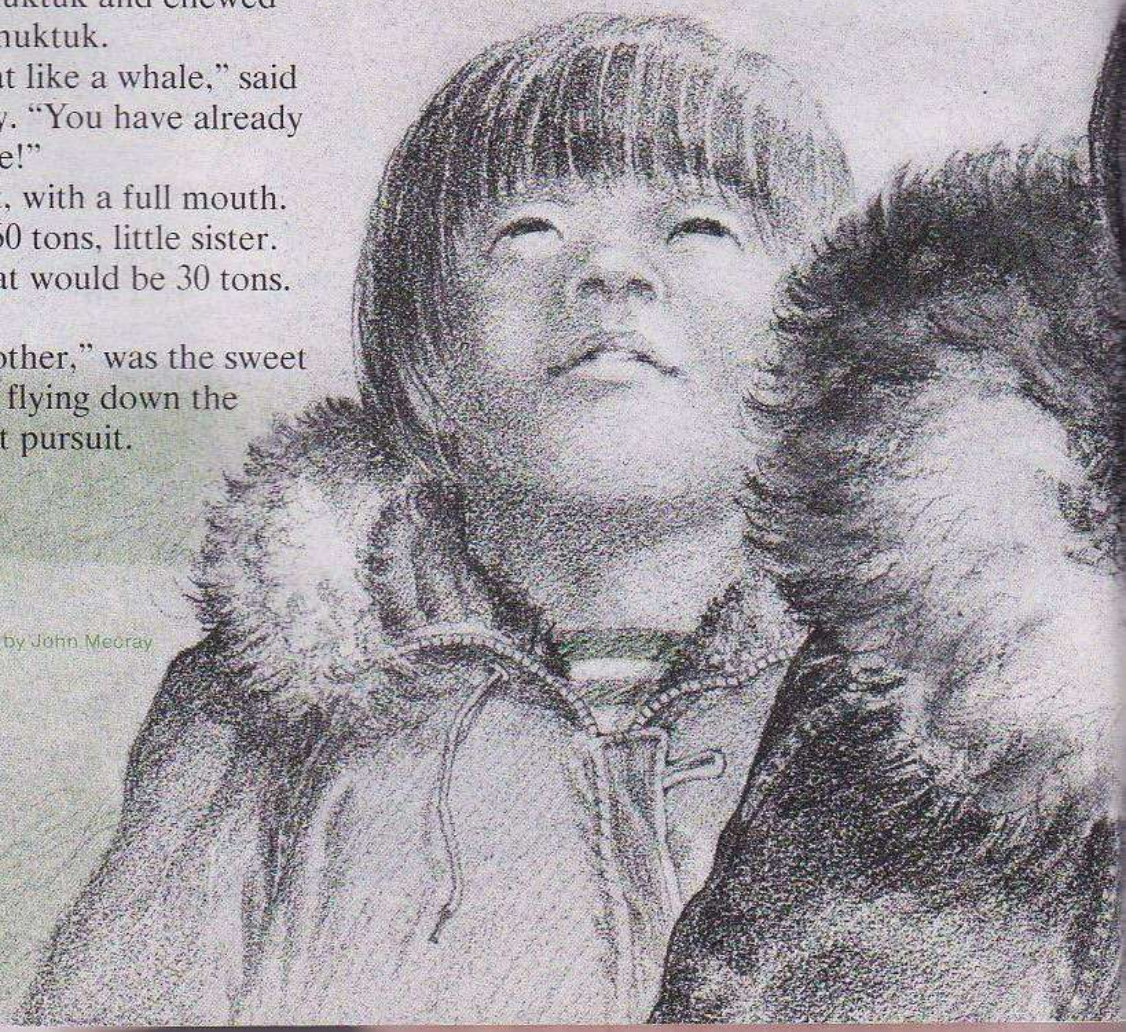
Naput's heart pounded. He ran as hard as he could, but his sister stayed ahead of him.

Suddenly Nadeen collapsed on the ground. She lay there, laughing and panting. Naput almost fell on top of her.

"I lose!" gasped Nadeen. "I can't run another step."

"And I can't wash your face in the sea," said Naput sorrowfully. "We are too far away. Just wait till we get back!"

But Nadeen paid little attention to her brother's threat. She plucked a flower in-



Drawings by John Mecray

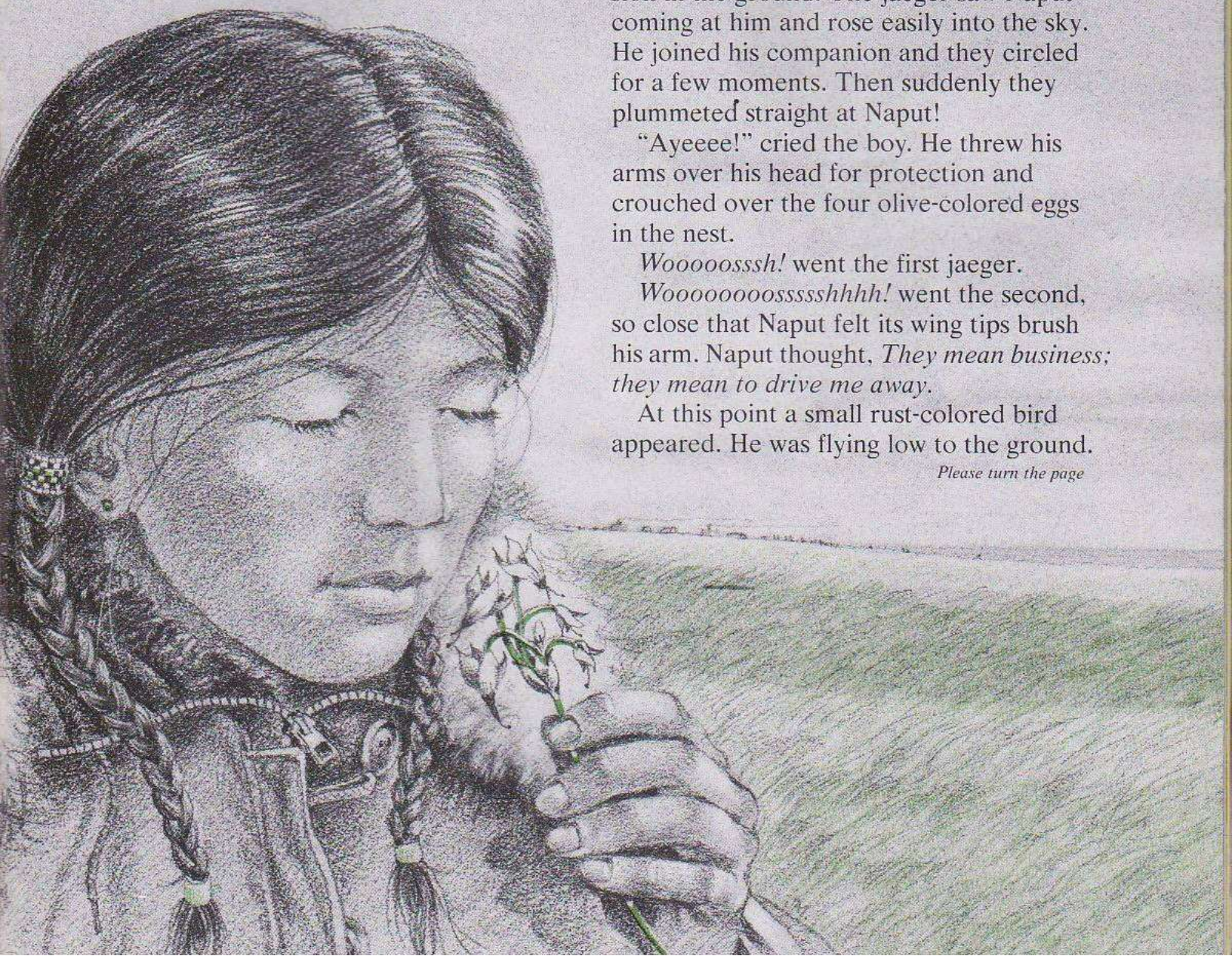
# PHALAROPE

stead. It was a small, white shooting star. She held it to her nose, sniffing.

Nestled in the tundra grass were hundreds of tiny flowers—yellow, white, blue, purple, even brown. The tundra seemed to have all the beauty of a rainbow.

Naput was looking up into the sky. "Watch," he said, pointing.

Overhead were two large, dark birds about the size of a crow—pomarine jaegers. Long tail feathers trailed behind them.



*"Tsunu,"* said Nadeen, using the Eskimo word for jaeger.

Suddenly one of the birds dove. Down it hurtled, swift and straight as a spear. In spite of its great speed, the jaeger landed on the tundra gently.

"It is after the nest of *sabra,* the red phalarope!" cried Naput, jumping up. "The jaeger will destroy its eggs."

He ran toward the nest. The nest was just a few wisps of grass tucked into a depression in the ground. The jaeger saw Naput coming at him and rose easily into the sky. He joined his companion and they circled for a few moments. Then suddenly they plummeted straight at Naput!

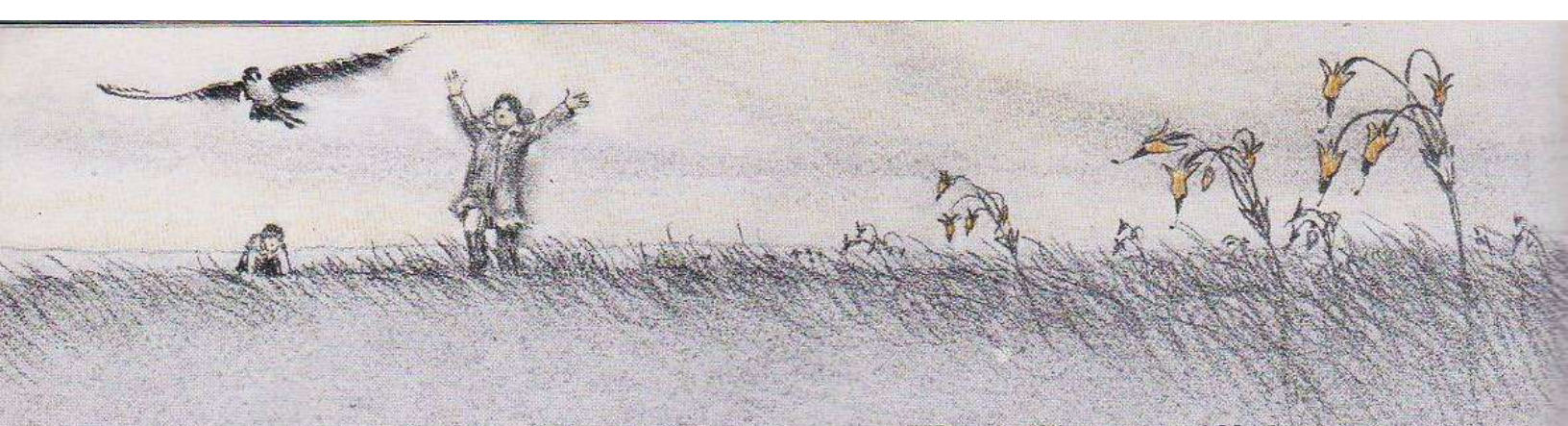
"Ayeeee!" cried the boy. He threw his arms over his head for protection and crouched over the four olive-colored eggs in the nest.

*Wooooosssh!* went the first jaeger.

*Wooooooooosssssshhhh!* went the second, so close that Naput felt its wing tips brush his arm. Naput thought, *They mean business; they mean to drive me away.*

At this point a small rust-colored bird appeared. He was flying low to the ground.

*Please turn the page*



Again the jaegers dove. This time Nadeen ran at them flapping her arms and shouting, "Go! Go, fearless ones! We won't let you have the eggs!"

A rust-colored bird flew at the diving jaegers.

"It is the father phalarope!" Nadeen shouted. "He has returned."

Naput peeked from under his arms and saw his sister flapping her arms and leaping across the tundra. The phalarope sped like a lance at the jaegers, and the jaegers quickly pulled out of their dive.

Cries, calls and wings beat the air. The jaegers swooped away uttering high *eeeeuk-eeeeuk!* sounds. In seconds they were out of sight.

The phalarope landed near the children, watching them with its bright eyes.

"Come on, Naput," directed Nadeen. "The phalarope must get back on the nest before the eggs cool too much."

"I wonder if he knows we saved his eggs," said Naput.

"I doubt it," said Nadeen.

"Why does the father hatch the eggs?" continued Naput.

"Why not?" answered Nadeen.

"That is the mother's job," said Naput.

"Nature does not have to make everything the same," answered Nadeen.

"Crazy birds," muttered Naput.

The children walked slowly away from the nest so as not to alarm the phalarope. A short distance away, they paused to watch. The phalarope flew to its nest and settled carefully over the eggs. ► He stared at the children. He would attack them if they got too close.

If all went well, his eggs would hatch about mid-July. Then he would be busy feeding the young. At the end of summer, they would be ready to fly thousands of kilometers with him on a southward migration to warmer climates.

"Doesn't seem natural, his doing all the work," muttered Naput.

"Well, that's the way the red phalarope does it," said Nadeen wisely.

"Do you know something, little sister?" asked Naput.

"What?"

"You looked just like a jaeger when you were screeching and flapping across the tundra. I thought you'd take off and fly!"

"Oh, pooh!" shouted Nadeen. "I'll get you!" Now it was her turn to chase Naput. Off they raced across the tundra. They didn't stop until they reached the village.

The celebration was still going on and there was plenty of muktuk left. Nadeen chose a big chunk and chewed on it happily. *Oh,* she thought, *was there ever such a celebration as nalukatuk in the whole world?*

*The End*

---

Rangers: Sometimes Eskimo names and words sound strange to our ears and perhaps some of the other words in this story do too. I thought I'd give you a little help in pronouncing them. *R.R.*

| | | | |
|---|---|---|---|
| Naput | NAY-put | Kuraloo | KOOR-ah-loo |
| Nadeen | NAH-deen | Nalukatuk | NA-lu-ka-tuck |
| Nanook | NAN-ook | Mukluks | MUCK-lucks |
| Sabra | SAH-bra | Pomarine | PO-mah-rine |
| Muktuk | MUCK-tuck | I'sunu | EYE-soon-oo |
| Jaegers | YEA-gurrs | Phalarope | FAL-uh-rope |

by Fred Johnson

# Papa parents

Mother animals always take care of the babies, right? If you've read about the phalaropes on pages 14-17, you know this isn't always so. With some animals, papa gets the job of babysitter.

Papa SEA HORSE (1), for example, babysits with the help of a special pouch on his belly. Mama comes along and squirts up to 600 brick-red eggs into the pouch, through an opening at the top. She then swims off to do whatever it is that mama sea horses like to do.

After papa sea horse fertilizes the eggs they begin to grow into baby sea horses. Papa's belly gets fatter and fatter. Some fifty-five days later papa sea horse begins to squeeze his belly muscles. The babies squirt out in bunches of several dozen at a time.

The young sea horses are able to care for themselves right away and begin to feed on microscopic sea creatures and plants. They had better stay away from papa though. After all that work he is hungry and quite likely to eat some of his babies.

GIANT WATER BUGS (2) are found in many parts of the world. One kind found in the United States is about 2.5 centimeters (an inch) long. It spends most of its time prowling among the weeds of ponds and creeks. Every so often it comes to the surface to take in air.

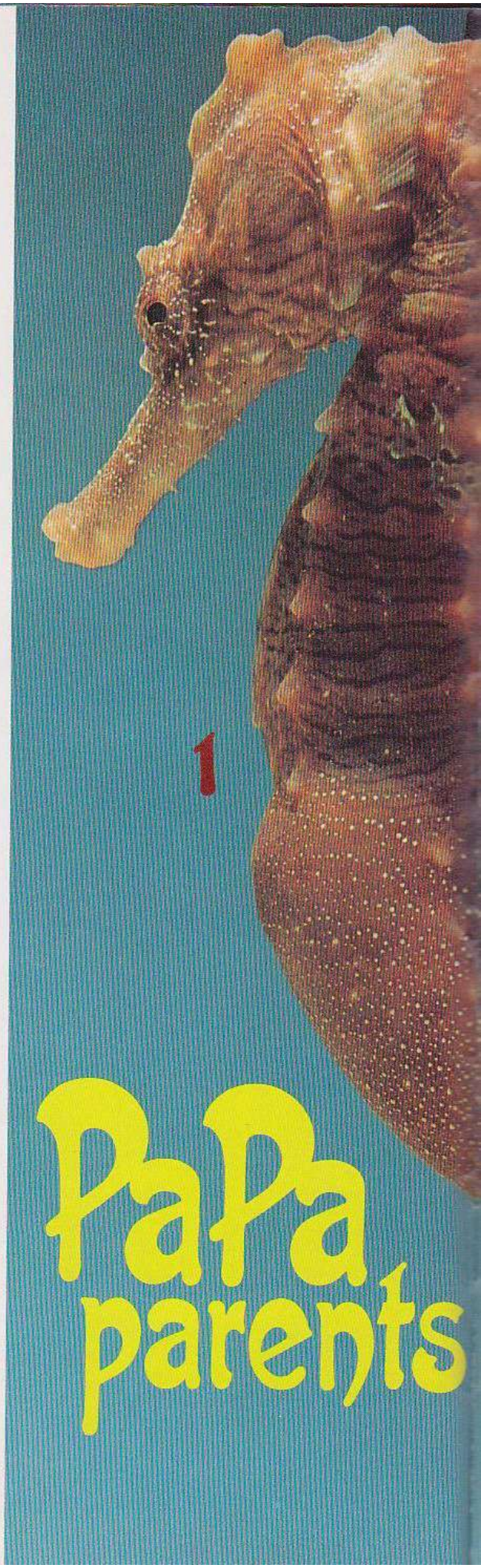
When a papa water bug comes to the surface, mama water bug is quite likely to sneak up on him and wrap her legs tightly around his body. Then she smears his back with a special "waterproof glue" that she makes. On this she lays up to 100 eggs. Then back she goes to the bottom.

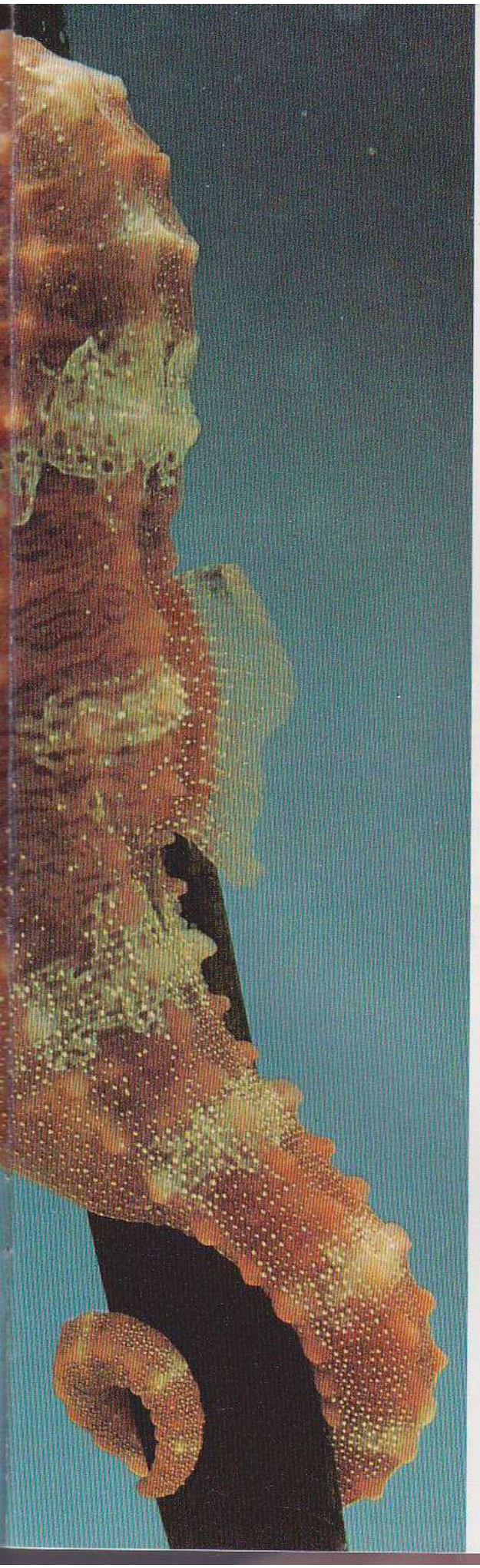
For the next ten days or so the eggs hitch a ride while papa prowls around looking for food. Finally the eggs hatch and the babies take off on their own.

Deep in the jungles of Central and South America lurks the ARROW-POISON FROG (3). After finding a female and jumping about, papa frog persuades her to lay her eggs on the ground. Mama then hops away, and he fertilizes the eggs with his sperm.

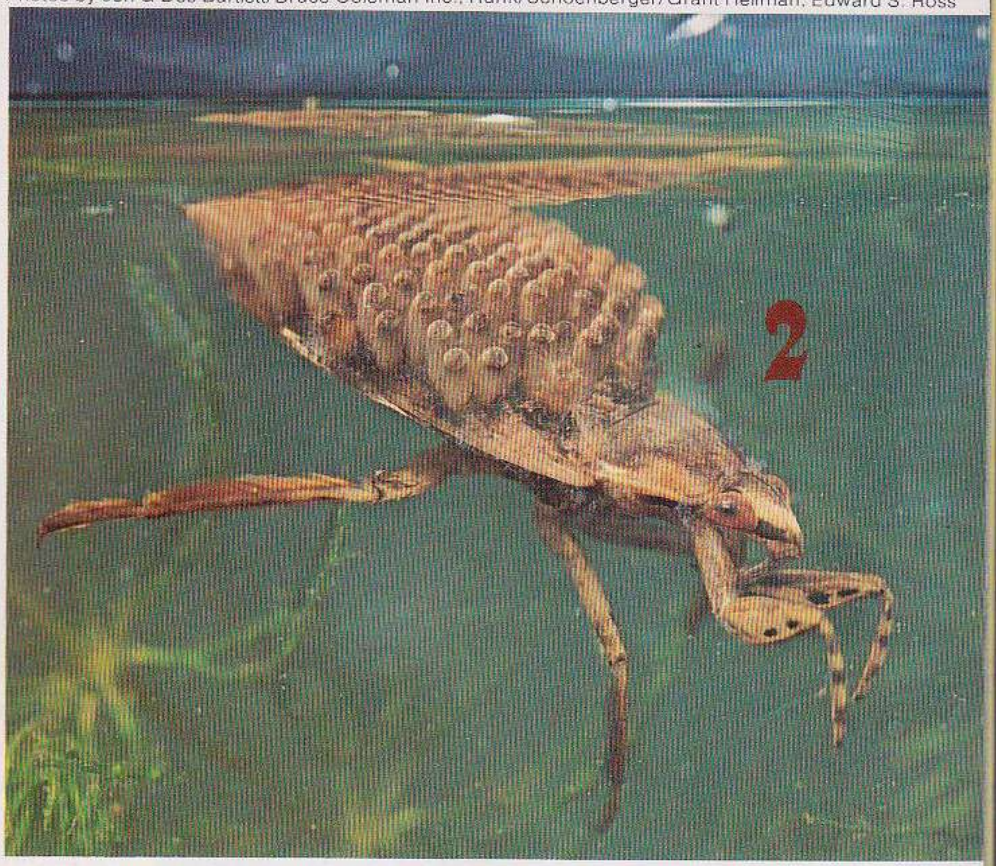
Somehow he manages to get the eggs on his back. There they stick until they hatch.

As with all frogs, the babies begin as tadpoles. As many as twenty may piggyback around on papa. Papa frog finally goes into the water and the babies wiggle off in all directions. *Please turn the page*



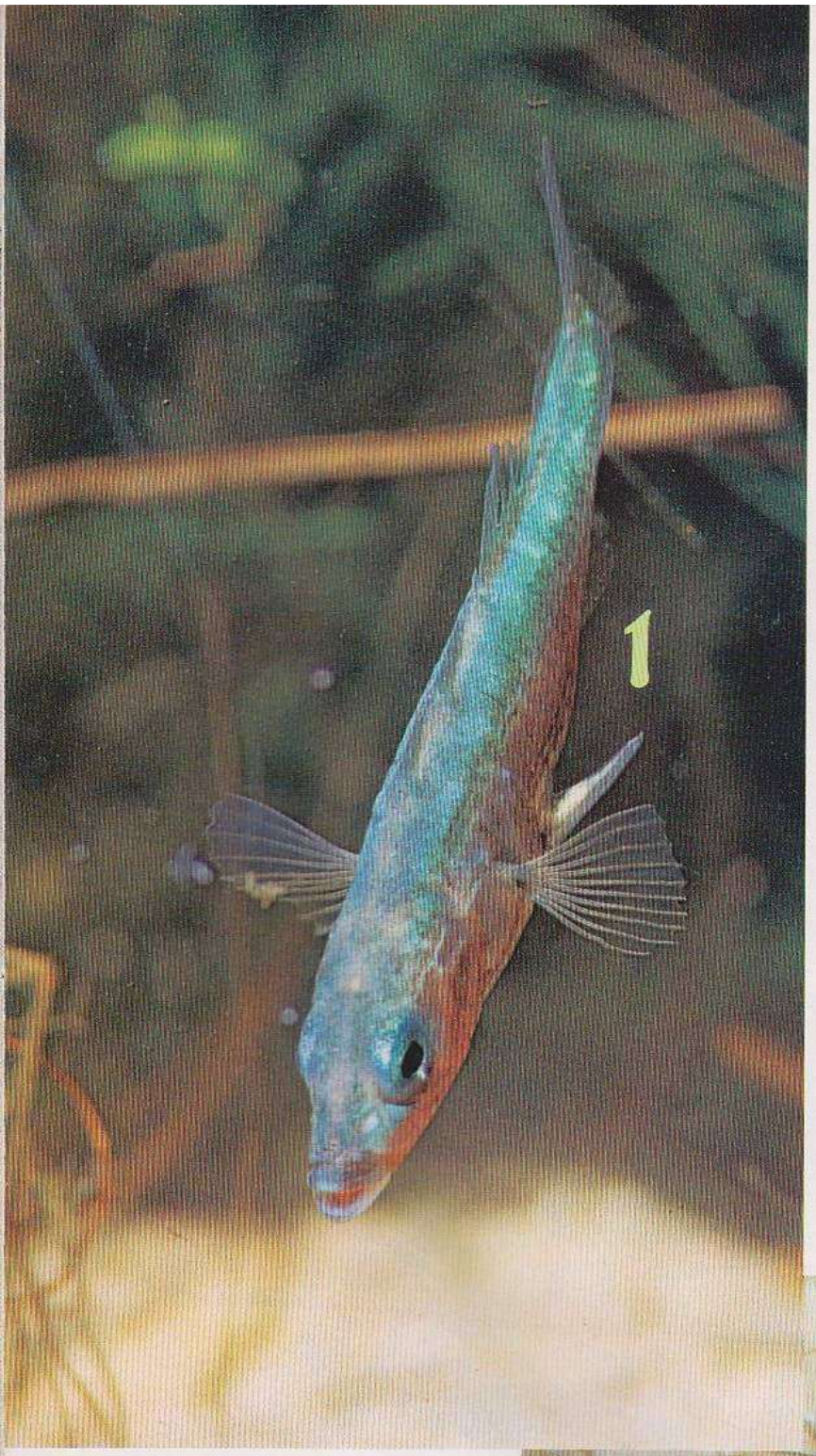


Photos by Jen & Des Bartlett/Bruce Coleman Inc.; Runk/Schoenberger/Grant Heilman; Edward S. Ross



**Let Dad do it!**

(1) Papa's belly pouch holds hundreds of baby sea horses.
(2) Sticky eggs hitch a ride on papa water bug's back.
(3) Tadpoles will soon wiggle off papa arrow-poison frog.




Another papa parent—the Three-Spined STICKLEBACK—may live in a stream or pond near you.

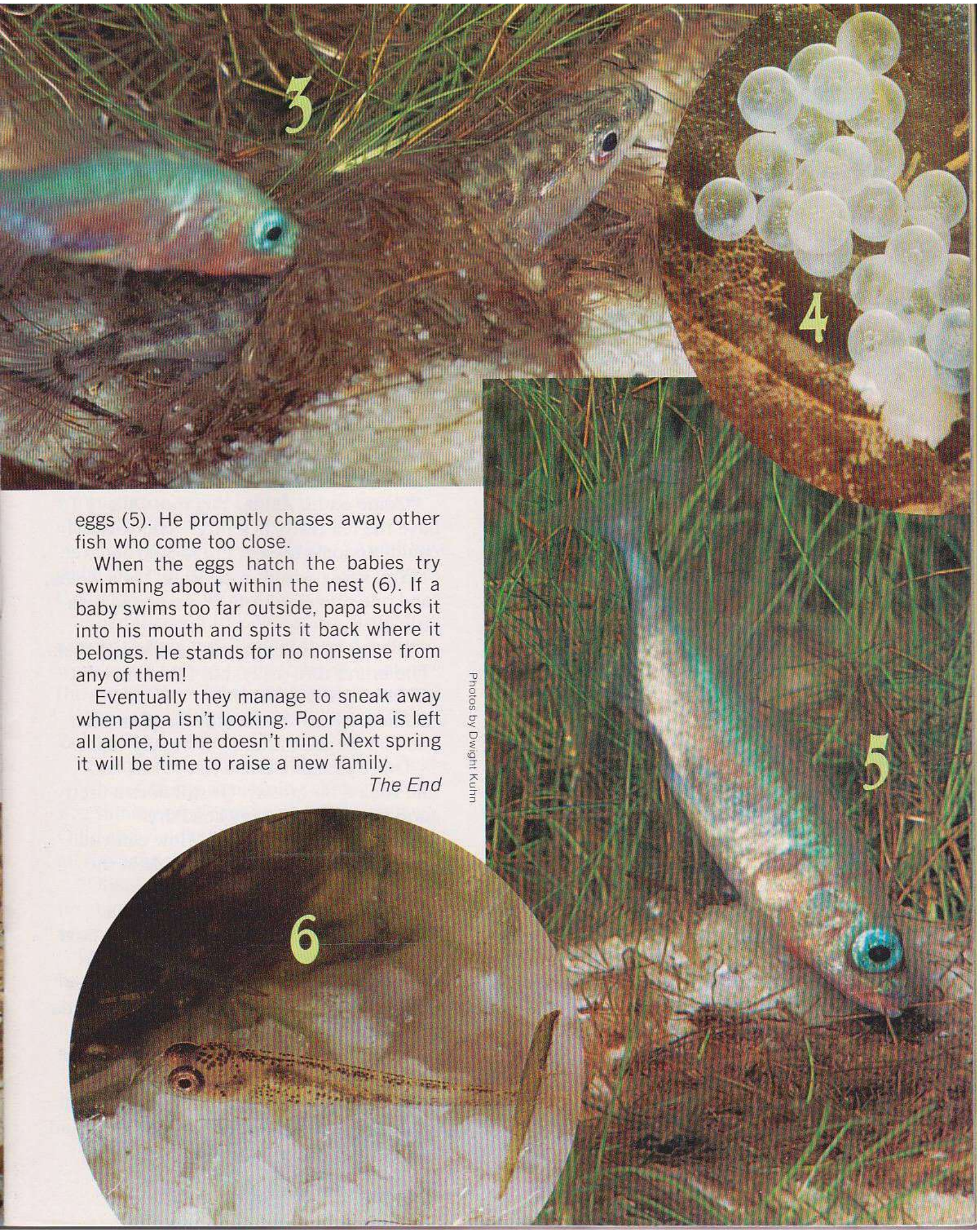
At a certain time in the spring papa stickleback (1) becomes very excited. His eyes turn bright blue. His belly turns bright pink. He dashes around and chases other males away.

After a while he goes into a frenzy. Using his nose to plow and his fins to rake, he digs and scoops at a sandy place on the bottom (2). He makes a small hollow and fills it with pieces of water plants. These he keeps in place with a sticky fluid. Then he tunnels through the pile of plants. Papa stickleback is making a nest.

Once his nest is the way he wants it, he seeks out a female. His colors flash even brighter as he zigzags around her. If she decides that he is a champion zigzagger, she enters his nest. He pokes at her tail (3) until she lays about fifty eggs (4). Then papa chases her away and immediately squirts sperm over the eggs. He may lure two or three other females into his nest to lay more eggs before he settles down to guard them.

Papa stays on guard constantly. He fans the water with his fins and makes sure a good supply of oxygen flows over the

**Papa stickleback is very busy! He builds a nest, chases enemies, fans the eggs, and guards his big-eyed babies.**




eggs (5). He promptly chases away other fish who come too close.

When the eggs hatch the babies try swimming about within the nest (6). If a baby swims too far outside, papa sucks it into his mouth and spits it back where it belongs. He stands for no nonsense from any of them!

Eventually they manage to sneak away when papa isn't looking. Poor papa is left all alone, but he doesn't mind. Next spring it will be time to raise a new family.

*The End*

Photos by Dwight Kuhn

# Ranger Rick and His Friends

**Adventure 86 "Keep Your Head Dry!"**
by Lee Stowell Cullen

It was almost Christmas. An icy wind whistled around Ranger Rick's head as he hurried toward the warmth of his tree-hole home. Deep Green Wood was already covered with snow, and Rick knew there would be more snow before nightfall.

He pulled his hat down tightly to shield his eyes. As he pulled, the brim suddenly tore away from the crown. The snow that had gathered in the brim started to melt and trickle down the side of Rick's face.

"Golly," he exclaimed, "I'll have to sew this old thing together when I get home."

Just then a sleek figure slid down a snowbank in front of Rick.

"Boo," cried Ollie Otter. "Boy, this snow is great! I've just spent the afternoon sliding."

"Oh, you and your love of snow," laughed Rick. "Right now I could do without any more of it. I just tore my hat again and the melting snow is freezing my cheek."

"From the look of that old hat, no one will be able to put it together again, Rick," said Ollie. "Why don't you get a new one?"

"I *like* this old hat. Ranger Tom gave it to me when I became head of my Rangers here in Deep Green Wood."

When Ollie and Rick finally got to Rick's tree hole, Zelda Possum was waiting for them. "I thought you'd be coming home about now," she said. "I've had a busy day and I'm in the mood for a little company and some sassafras tea."

"Come on in, Zelda. You too, Ollie. I'll have the tea ready in a jiffy," said Rick. "I could use some myself, I'm so cold and wet."

"You sure do look cold, Rick," said Zelda, "and one side of your face is covered with little icicles!"

"It's this old hat of mine," explained Rick. "The brim's torn away, but I'll fix it and it will be as good as new."

Ollie laughed. "That old thing has been fixed up 'as good as new' too many times."

"Don't you dare make fun of this hat," said Rick a bit crossly. "It still does a pretty good job of keeping my head dry."

Ollie picked up the hat. "How can you keep your head dry with this hole in the top?" said Ollie, poking at it.

"Uh-oh. It wasn't just the brim then," sighed Rick. "No wonder my head got cold."

After the friends had warmed up with their tea and chatted about the things they still had to do for Christmas, Ollie and Zelda said it was time for them to head home.

"Thanks for the tea," they called as they trudged through the snow.

When they were safely out of the house, Zelda said, "Ollie, that hat of Rick's has had

it. Let's get him a new one! I think it looks awful to see him with a tattered old hat on his head."

"You're right," said Ollie. "But you know Rick never goes anywhere without his hat. And besides, where would you go to get another one?"

"Don't be dumb, Ollie," exclaimed Zelda. "Ranger Tom should be able to help us. But look, let's not tell anyone else. I think it would make a great Christmas present."

The next day, Zelda and Ollie went to see Ranger Tom. When they told him about Rick's hat, Tom laughed. "I'm surprised that old thing is still in one piece. But you're in luck. I just ordered a new hat for myself and it's much too small. I think it will fit Rick nicely."

"That's perfect," cried Zelda. "And I have some ideas for fixing it up as a super present. Come on, Ollie, we have work to do!"

When they got to Zelda's, she bustled around getting needles and thread. Ollie wasn't sure he was going to be so great on the sewing, but Zelda put him right to work.

When they had finished, Ollie said. "Boy, Zelda, that looks *neat*!"

"Fit for a Chief Ranger, I'd say," said Zelda.

When Christmas morning came, the sun was shining on gleaming new-fallen snow. Ollie and Zelda, with an air of mystery, told all the animals to gather at Zelda's.

"Ollie," Zelda said, "go get Rick. Make up any excuse, but don't give away our secret."

Off Ollie dashed, slipping and sliding and humming happily to himself.

A short time later Rick and Ollie walked into the clearing near Zelda's. All the animals yelled, "Merry Christmas, Rick!"

"Hey, what's going on?" asked Rick, looking startled.

Zelda stepped forward. "Ollie and I have something for you, Rick. And since we're *all* your Rangers, we wanted all the animals together." She handed him the package.

When Rick opened it his eyes popped. "WOW! Do I ever need *this*!" He plunked the hat on his head. It fit perfectly.

"Look, look," cried Sammy Squirrel. "It's got his initials on the front!"

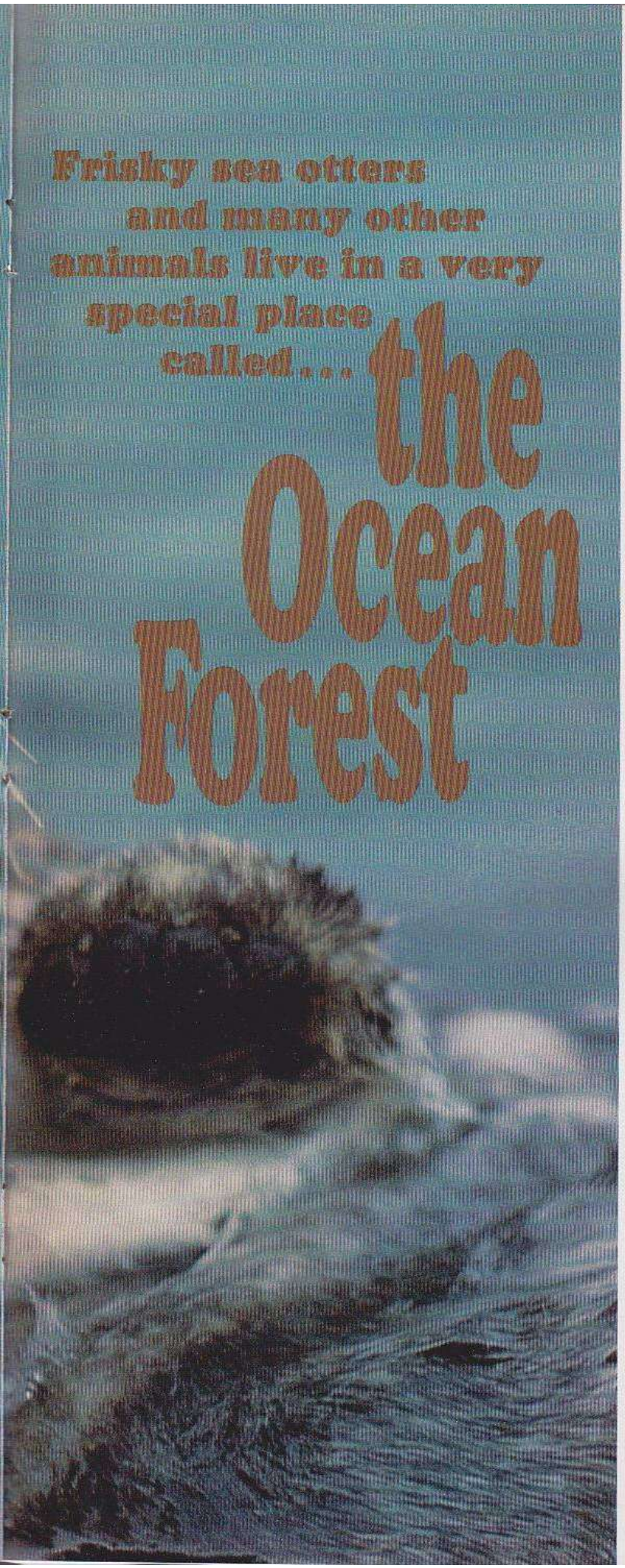
"I did that," said Ollie proudly.

"And I," shouted Zelda, "made the holes for his ears!"

*Please turn the page*

Drawings by Lorin Thompson

RR



# Frisky sea otters and many other animals live in a very special place called... the Ocean Forest

Story and Photos by Jeff Foott

Want to visit this underwater home for sea otters? Then close your eyes and imagine a forest with no trees, birds or deer. Instead there are giant seaweeds called kelp, sea stars, crabs, fish—and the otters.

The kelp that grows here is a kind of alga distantly related to the green scum on a freshwater pond. This seaweed is anchored to the ocean floor by rootlike *holdfasts* that cling to heavy rocks on the sea floor. Stems, or *stipes,* grow in a thick clump from each holdfast. The stipes grow up to the surface —often as far as 40 meters (about 130 feet) above the bottom!

Giant kelp can grow as much as 60 centimeters (about two feet) in length a day. It is the fastest-growing plant in the world.

Each leaf or *blade* of this sea plant has a special gas-filled bulb attached to it. These bulbs keep the leaves afloat on the surface in the sun. The sun is necessary for the kelp plant to make its own food.

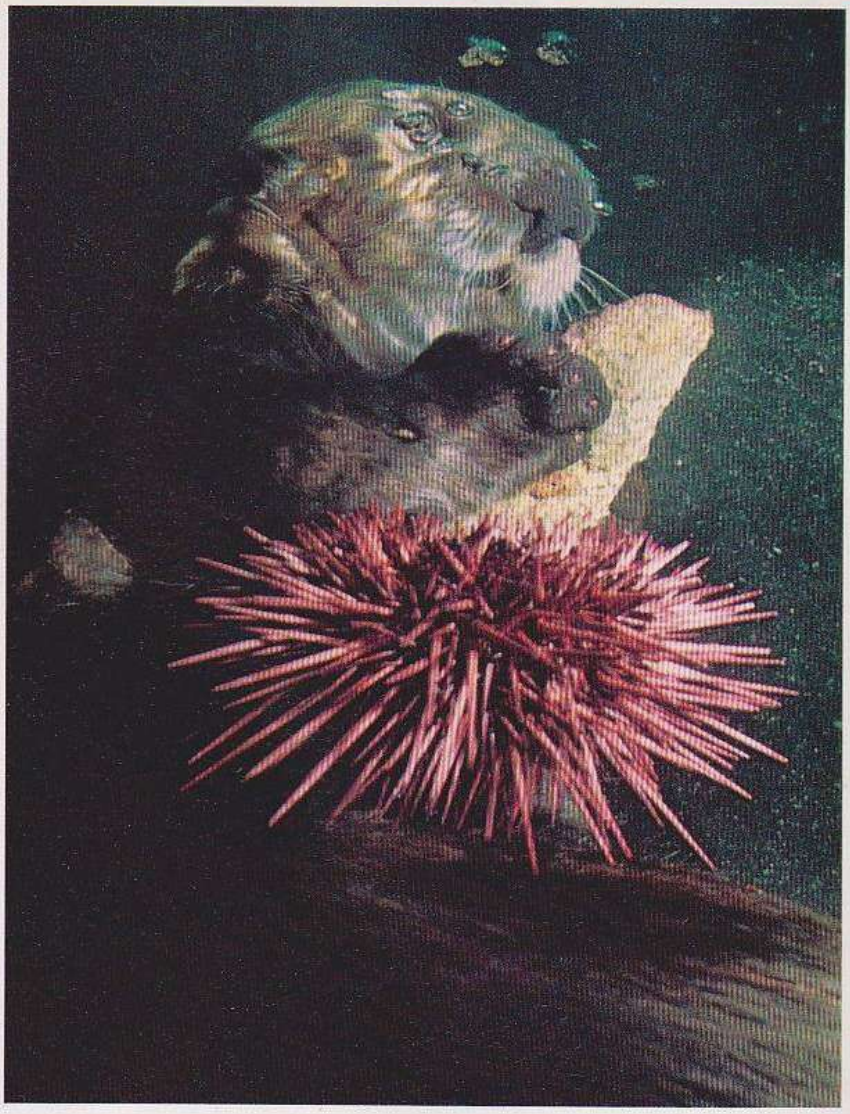
An underwater kelp forest, like a land forest, resembles a tall apartment building with different tenants living at different levels. Sea stars, lobsters and crabs crawl along the bottom, looking for food and using the plants as places to hide. Fish, shrimp and snails live in the middle, and sea otters spend most of their time at the top.

Also like a land forest, the underwater forest has its share of enemies. The strong waves of a storm may uproot the kelp plants and wash them ashore where they die. But the forest's worst enemies are those spiny little animals that look like crawling pin cushions—the sea urchins. Usually the urchins eat only kelp blades that naturally fall to the bottom. But when the urchins become too plentiful, they begin to nibble on the stipes. This causes the stipes to break and float away to die. *Please turn the page*

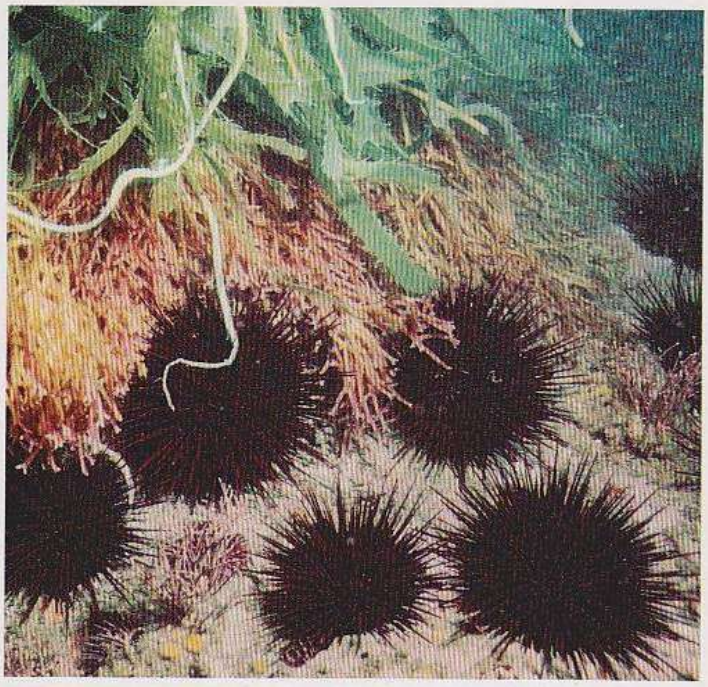
The sea otter is the forest's best defense against these pin cushion pests. But eating them isn't easy. The sea otter must first dive as deep as 10 meters (33 feet) to search for them. It has only about a minute to look before it must swim to the surface for more air.

When the otter finds a sea urchin, it grabs the urchin and a rock. Yes, a rock! Grasping the sea urchin in one front paw and tucking the rock under its other front leg, the otter swims swiftly to the surface. It rolls on its back and its chest becomes a built-in lunch counter. The otter puts the rock on its chest and bangs the urchin on the rock until its shell cracks. The otter's tough little paws are not harmed by the urchin's stinging spines. The otter may have to give it as many as ten whacks, but that's easier than opening a mussel, which may take three times as many whacks before it breaks open.

Every few minutes the otter rolls over to wash off any scraps that may have spilled on its fur. It is very important for the otter to keep its fur clean and to comb it with its paws. Only clean, fluffy fur can trap enough air to keep the otter afloat and warm in icy ocean water.



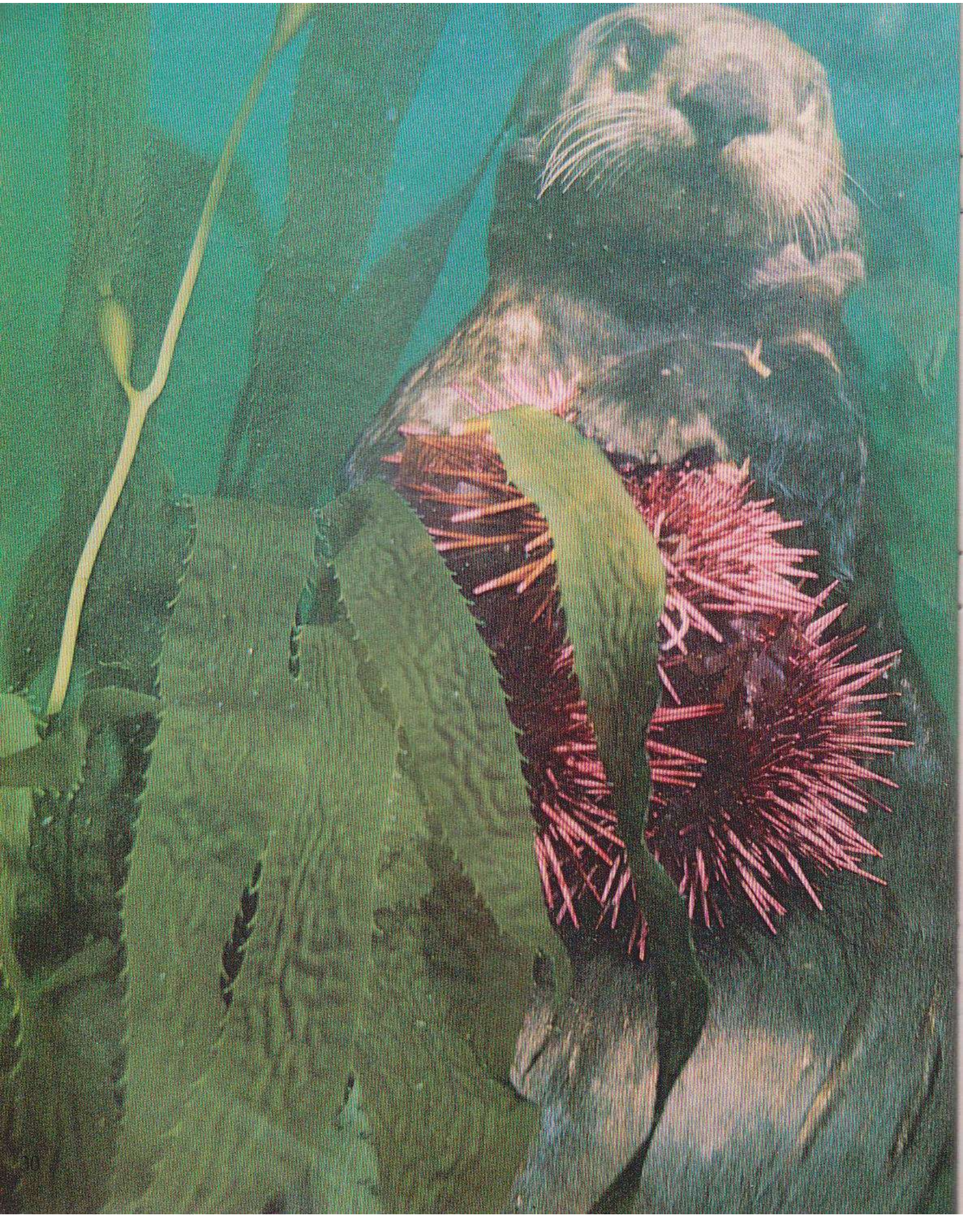
**Kelp forests teem with life. ◄ Sea urchins munch on the kelp. ► And otters munch on urchins! After a deep dive, the otter clutches an urchin and a rock in its paws. ▲ Then it swims . . .**



The sea otter is a very big eater. It can eat about one fifth of its own body weight in food every day. Zookeepers say that in captivity they can eat more than a lion does!

When a sea otter's stomach is full of sea urchins or other food, and its fur is clean and groomed, it wraps kelp around its body. Now it can go peacefully to sleep and not worry about drifting away from its home in the ocean forest.

*Please turn the page*



. . . swiftly to the surface. ◄ Using the rock as a tool, it cracks the urchin and begins to eat. ▲ Afterward the otter carefully cleans its fur. ▼ Clean fur traps air that keeps the animal warm and afloat.

*Please turn the page*

**A full kelp boat sails to the factory. There the seaweed is treated to remove a magical jelly that ends up in many things you eat—such as ice cream, gelatin desserts and frostings.**

Have you eaten your kelp today? If you've eaten gelatin dessert, ice cream, salad with dressing or cake with frosting, then you've probably eaten a kind of jelly called *algin.* And algin comes from kelp!

Algin is a magical chemical with lots of important jobs to do. It stops chocolate from settling to the bottom of your glass of chocolate milk. It makes ice cream and shoe polish smoother and creamier. It helps beer stay foamy.

To harvest kelp from the ocean, special boats cut the kelp like a giant lawnmower. The kelp is cut only at the surface, so the plants keep on growing, just as grass does after it has been mowed. Giant kelp grows so thick along the coast of southern California and northern Mexico that a kelp boat can harvest a full load in five or six hours.

But it was not always this way. Less than 10 years ago, kelp forests were in trouble. Sea otters that used to live there had been wiped out by fur hunters 60 years earlier. Sea urchins, with no predators to eat them, had a population explosion. Then the currents of cold water that the kelp needed changed direction, and warm water swept over the kelp. In some places this killed most of the kelp, and the urchins finished off what was left.

Many of the great beds of kelp that once provided homes for animals and a harvest for humans became underwater deserts!

The cold water returned after a few years, but the urchins kept the kelp from making a comeback. Scientists tried killing the urchins with quick-lime, a chemical that kills starfish that attack oyster beds (see *Ranger Rick,* March 1974). It worked on urchins too! Where the urchins were killed, new kelp plants sprouted and grew into the healthy beds of kelp we harvest today.

*The End*

# OLLIE OTTER'S FUN PAGE

Q. What is the easiest way to make a fire with two sticks?
A. Make sure one of them is a match.

—Jon Rubin, Age 8, Northport, New York

Q. If an egg floated down the Ohio River, where would it have come from?
A. From a hen!

—Ranger Forte, Woodhaven, New York

Q. What did the field mouse say to the hawk?
A. Why don't you pick on somebody your own size!

—Nancy Hoffman, Albuquerque, New Mexico

Q. What pine has the sharpest needles?
A. A porcupine.

—Eric Knapp, Age 10, Anchorage, Alaska

Q. What nut is like a sneeze?
A. A cashew nut.

A tongue twister from Susan Maholic, Age 8, Mendham, New Jersey:

The skunk sat on a stump and thunk the stump stunk. But the stump thunk the skunk stunk.

Q. Is your water supply healthy?
A. Yes. We only use well water.

—Dana Churchill, Age 10

Q. What do you call a sleeping bull?
A. A bulldozer.

—Laura Crowe, Age 8

Q. What did the father strawberry say to his baby strawberry?
A. Don't get caught in a jam!

—Connie, Age 7

Q. What did the bird say when his cage broke?
A. Cheep! Cheep!

—Maureen Walters, Glen Burnie, Maryland

Q. Why does the little boy keep a bike near his bed?
A. Because he is tired of walking in his sleep.

—Lana Gathwright, Age 9, Klamath Falls, Oregon

Q. What do you call a cow that sits on the ground?
A. Ground beef.

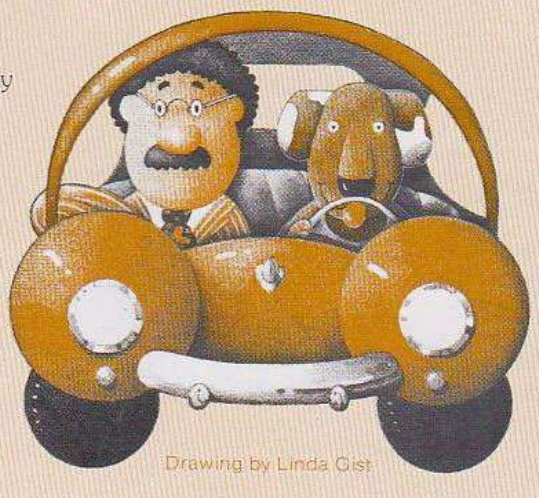
—Liz Hruby, Age 9, Mt. Holly, New Jersey

Q. What do camels use to hide from predators?
A. Camelflage!

—Mike Beeman, Age 7

**Q. How do you get a dog to stop barking in the back seat of a car?**
**A. Put him in the front seat!**

—Randy Benn, Age 8, Sussex, New Jersey



Drawing by Linda Gist

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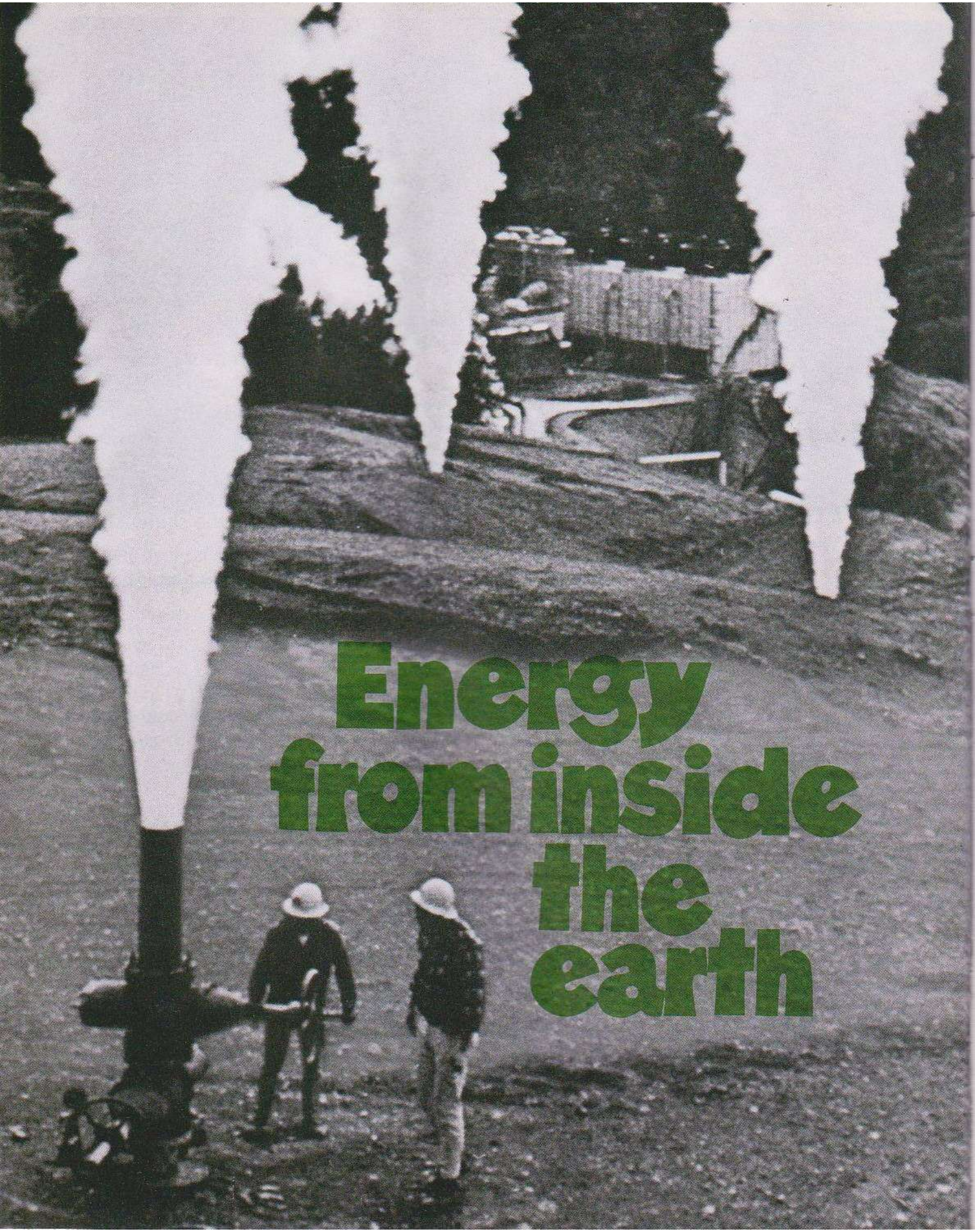


# Energy from inside the earth

by Nancy Garber

*The Indians used it to boil corn.*

*In Idaho you can swim outdoors in it all year round—even with snow on the ground.*

*People with aches and pains get into a pool of it and feel better.*

*In Yellowstone National Park a geyser called Old Faithful shoots it into the air about every 66 minutes.*

*In Colorado a deer swims in a warm, steamy pool of it.*

**What is it?** It is hot water and steam from inside the earth. Most of it is found where volcanoes and earthquakes have pushed hot rock up from deep inside the earth to very close to the surface of the earth. Near the surface the rock heats water that has soaked down into the earth.

Where there are cracks in the earth's surface, the water bubbles up as hot springs, spurts out as geysers or hisses out as steam.

*Please turn the page*

Old Faithful geyser ► spouts off as if to remind us there's a great supply of energy beneath our feet just waiting to be tapped ◄ !

We have discovered that we can use the hot water and steam from inside the earth to heat our houses and to make electricity. We call this source of heat and power geothermal (gee-oh-THER-mall) energy. We can make use of this energy when the steam or hot water comes up through cracks, or we can drill wells to release this energy.

The people of Iceland have been using hot springs for many years. They have built large pipes that carry the hot water into their schools and homes. Most of these schools have swimming pools heated by the springs, and some have heated greenhouses where fruits and vegetables grow. In the capital city of Iceland nine out of ten homes are heated with geothermal energy.

On a hillside in California, steam from the earth is busy spinning engines that make electricity for 400,000 people!

Italy also has a geothermal electric plant, and so do Mexico, Japan, Russia, Iceland and New Zealand. The steam is used to make electricity, which is sent to places where people need it.

Because we are running low on oil and gas, the search is on for *much more* geothermal energy. Most of the searching is being done where there have been volcanoes and earthquakes. Scientists know this is where the hot rock is close to the surface, so drilling won't be too deep or cost too much. Scientists are also experimenting with other ways of finding hot rocks.

Where hot rocks are discovered, there may be no hot water to bring up to the surface. So scientists are experimenting with a new kind of well drilling. They drill two wells instead of one. Then

they pump cold water down into the first well. The cold water flows toward the second well through cracks in the hot rocks. The water is heated by the rocks and comes up through the second well as steam or hot water.

Many people are working to find more geothermal energy because it seems to be a clean way of making heat

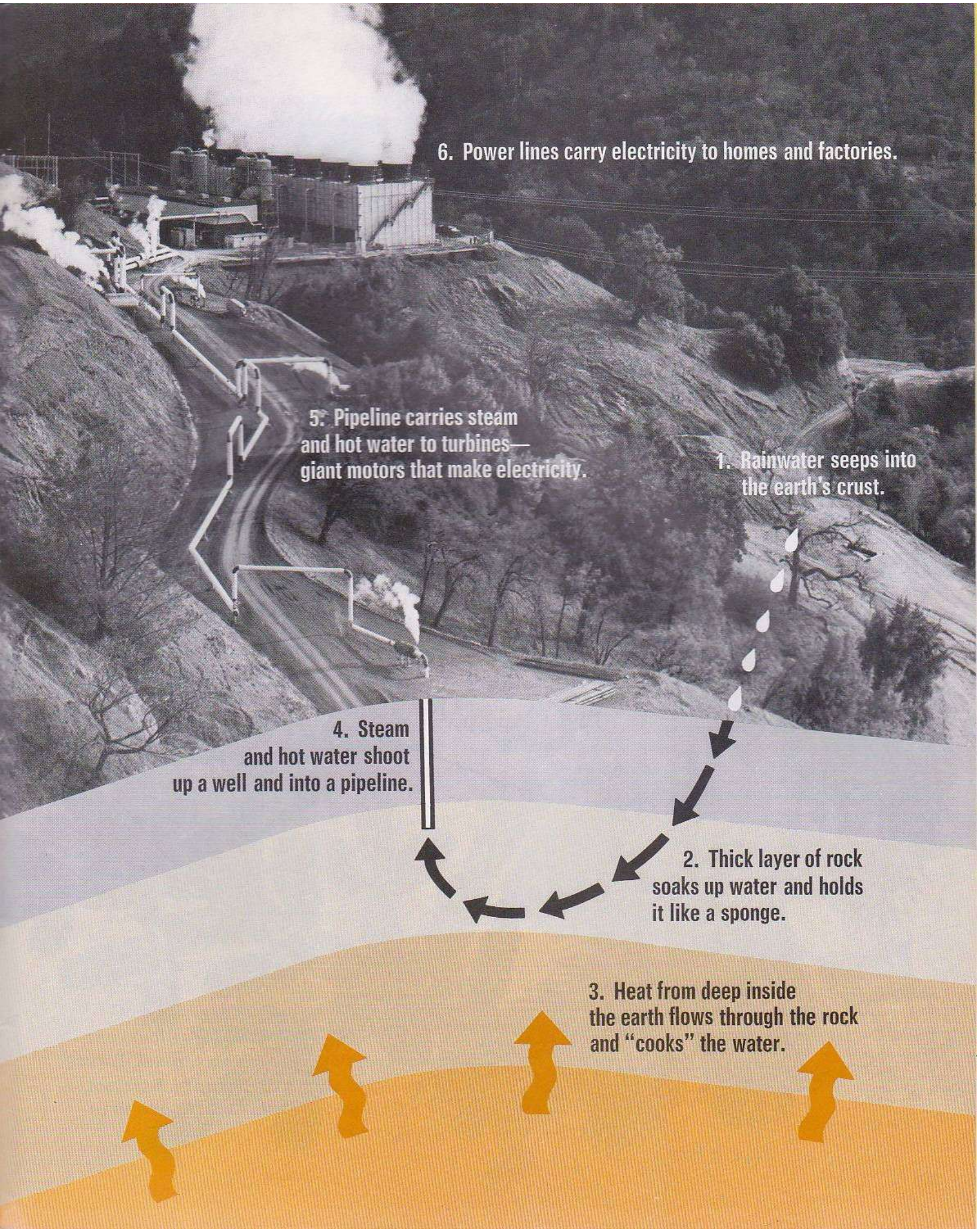
**The earth is a giant furnace ready to turn rainwater into steam, which we can use to make electricity.**

and electricity. There are no strip mines to dig, no oil spills to worry about and no radioactive poisons to pile up. You don't have to destroy rivers with dams and you don't have to burn fuels to make steam.

But nature gives nothing for free. Using greater amounts of geothermal energy will create problems that have to be solved. For example, there are sulfides and other chemicals in the steam that comes from the earth. If the people who drill the wells and use the steam do not remove the chemicals, they could cause air pollution. Another problem is that geothermal electric plants, like any electric plants, could ruin some of our best scenery. Imagine one in the middle of a place like Yellowstone Park! We must take great care in deciding where the plants can be built.

If we are careful in using it, geothermal energy can help us in many ways. It may be able to give us clean heat and electricity for as long as we need it. And it may help us save some oil and gas for those who will live on earth many years from now.

*The End*


6. Power lines carry electricity to homes and factories.
5. Pipeline carries steam and hot water to turbines—giant motors that make electricity.
1. Rainwater seeps into the earth's crust.
4. Steam and hot water shoot up a well and into a pipeline.
2. Thick layer of rock soaks up water and holds it like a sponge.
3. Heat from deep inside the earth flows through the rock and "cooks" the water.

Douglas Fir
Red Pine
Dear Ranger Rick
1412 16th Street NW,
Washington, DC 20036
Black Spruce
Scotch Pine

**Dear Ranger Rick,**

**Usually at Christmas our family buys a live tree that we plant in our yard after the holidays. But lots of my friends buy their trees already cut. Isn't it bad for the environment to cut down hundreds of trees every year? Pretty soon there won't be any Christmas trees left!**

**David Sutherland, Biloxi, Mississippi**

Buying live Christmas trees is a great idea, David. But for people who have no place to plant them, regular Christmas trees are just fine. Cutting them doesn't really disturb our forests. You see, many Christmas trees are grown in special places called "Christmas Tree Farms."

The trees on these farms are planted, cultivated, pruned and cut just for the holidays. Usually a tree such as you might buy is 1.2 to 1.8 meters (4 to 6 feet) tall and is about 10 years old. Because they have been well taken care of, they are full and well-shaped and ready to hold all your ornaments!

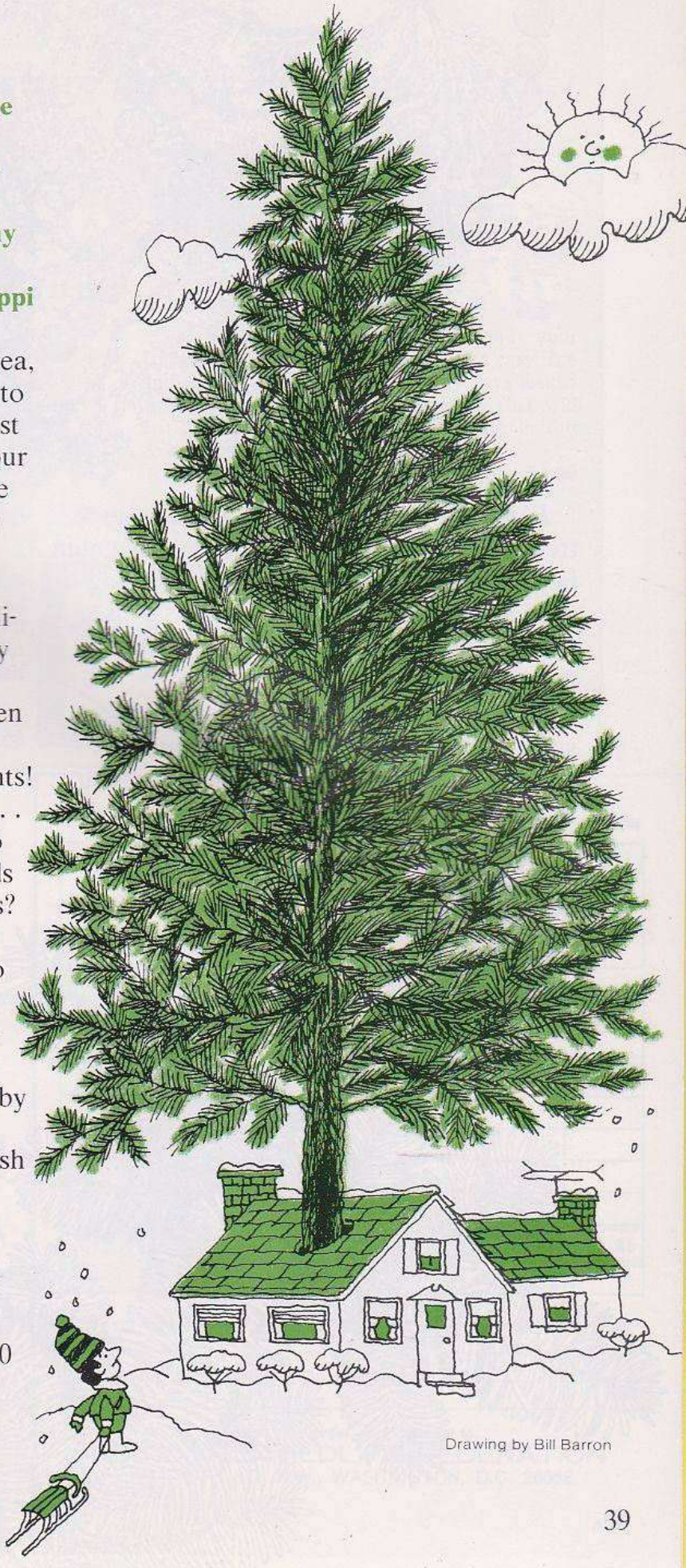
Most people think a Christmas tree is . . . a Christmas tree—and that's all there is to it. But do you know that *six* different kinds of evergreens are used for Christmas trees? Not all are grown on farms. Some come from forests that have been thinned out to make more growing room.

*Scotch pine* was imported from Europe long ago. It grows quickly in dry, infertile soil. It has become a beautiful bushy tree by the time it reaches your house.

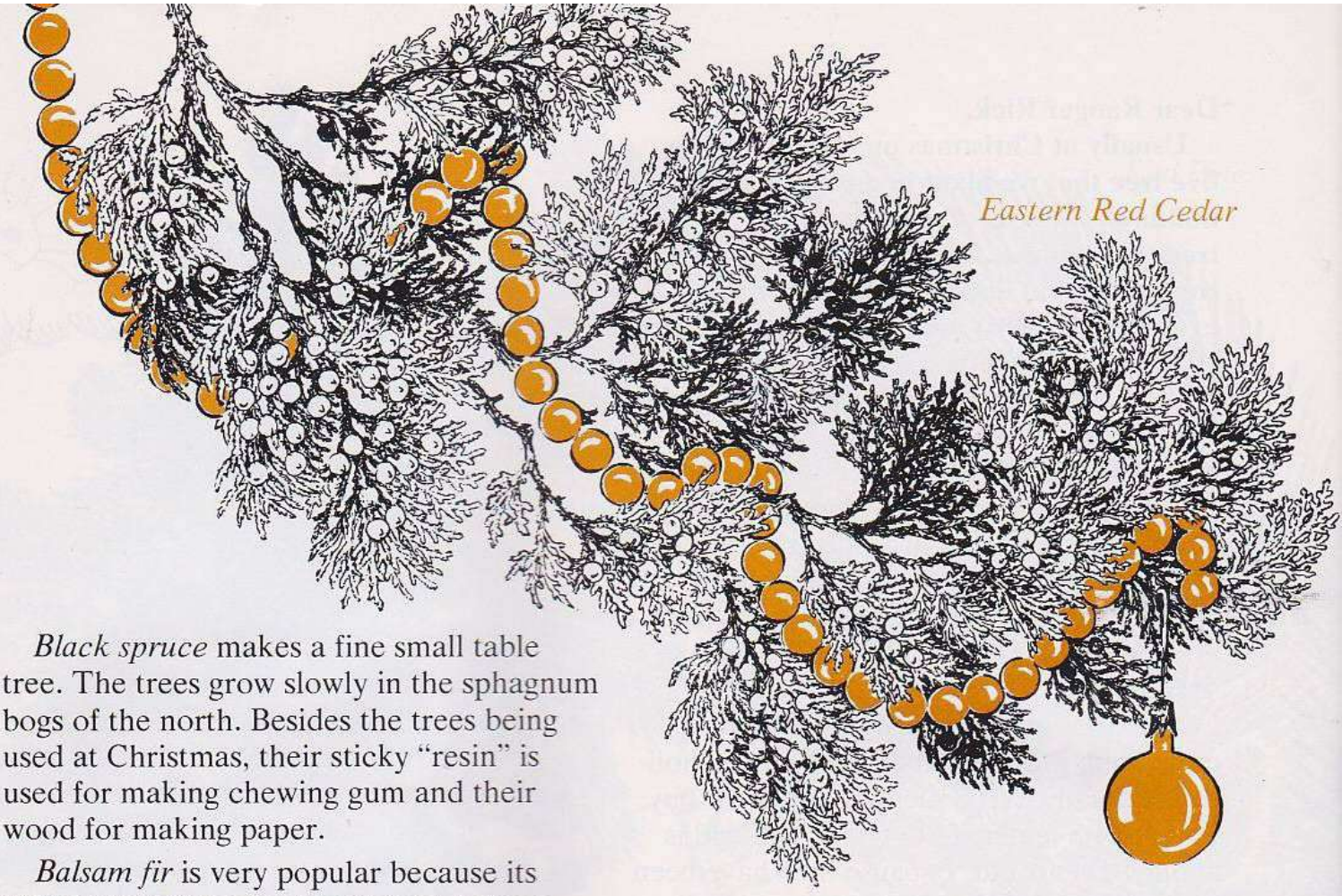
*Red pine* is easy to recognize by its reddish brown bark. It grows straight and fast on many Christmas tree farms in the northeastern part of the country.

*Douglas fir* grows in the western part of the country on both sides of the Rockies. Douglas firs can grow 90 meters (about 300 feet) tall. **(You'd need a hole in the roof to fit one that tall into your house!)**

*Please turn the page*



Drawing by Bill Barron



*Eastern Red Cedar*

*Black spruce* makes a fine small table tree. The trees grow slowly in the sphagnum bogs of the north. Besides the trees being used at Christmas, their sticky "resin" is used for making chewing gum and their wood for making paper.

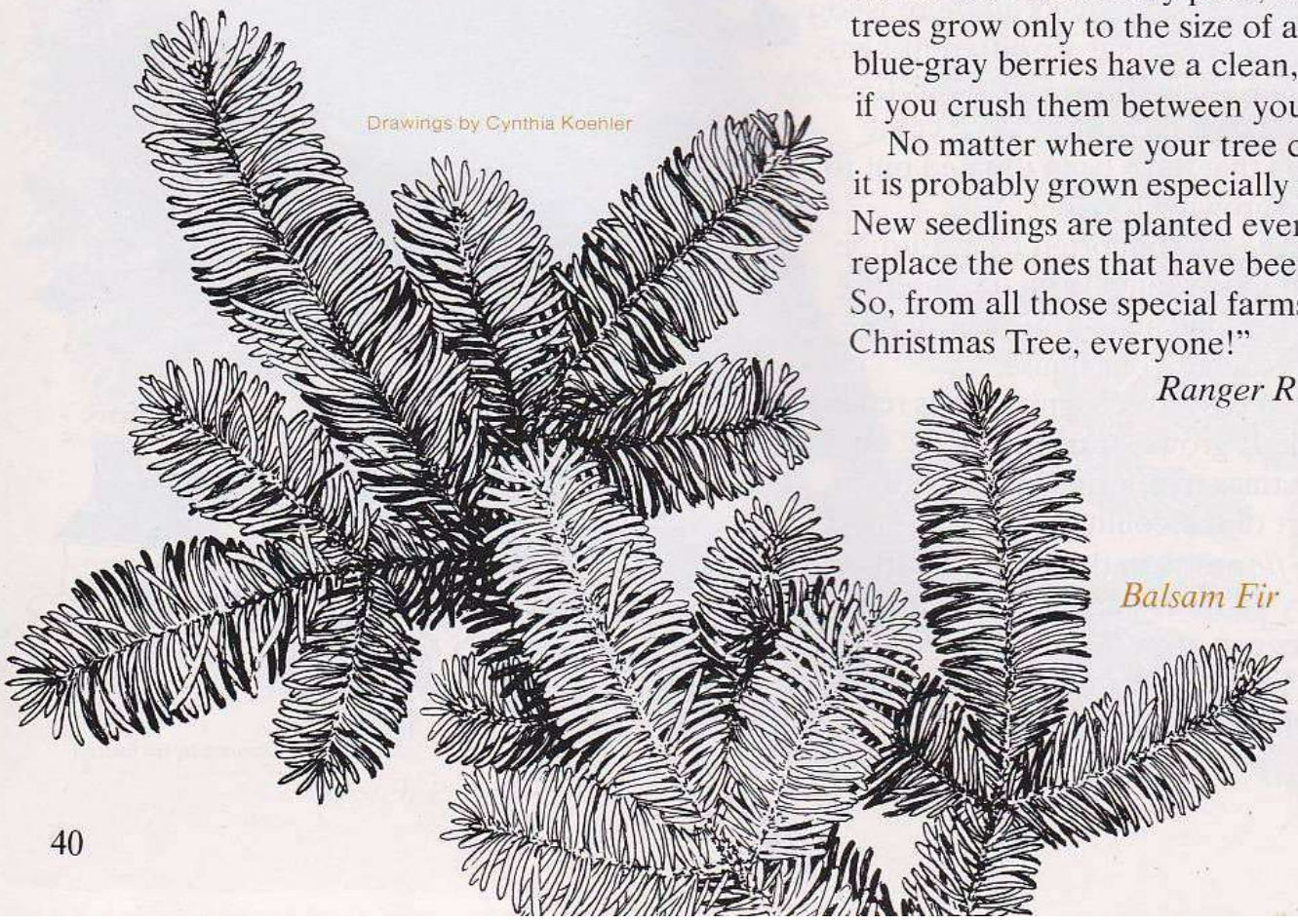
*Balsam fir* is very popular because its spicy odor brings the forest right indoors and the needles stay on the tree for a long time after the presents are all unwrapped.

*Eastern red cedar* is really a juniper that can grow over 30 meters (about 100 feet) tall. If the soil is really poor, though, the trees grow only to the size of a bush. The blue-gray berries have a clean, spicy odor if you crush them between your fingers.

No matter where your tree comes from, it is probably grown especially for Christmas. New seedlings are planted every year to replace the ones that have been cut down. So, from all those special farms, "Merry Christmas Tree, everyone!"

*Ranger Rick*

Drawings by Cynthia Koehler



*Balsam Fir*

# Think Christmas!

## . . . with nature gifts from Ranger Rick!

**WILDLIFE OLD MAID.** What a way to play this old favorite game — with beautiful full-color cards featuring birds and animals, wildflowers and fish. Forty-one cards in all. Instructions included. A great stocking-stuffer and a perfect gift to exchange with your school friends!

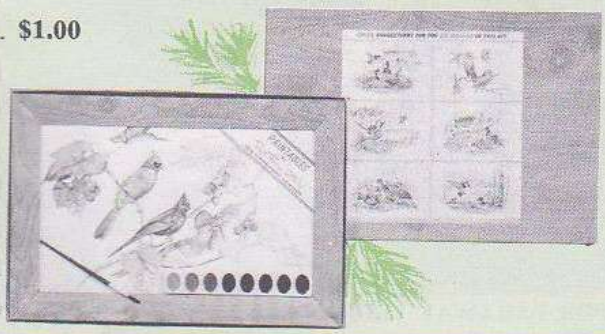
**20033GL Wildlife Old Maid $1.25**

**SONGBIRD DOMINOES.** You and your friends will love this game because it's easy, fun and especially good for those rainy days inside! And it's made of heavy board stock that will last and last. The bird illustrations are in full color. Complete instructions included.

**20024GL Songbird Dominoes ..... $3.00**

**RANGER RICK PATCH.** Your nature club friends would love to find this in their Christmas stockings. Bet you'd like a Ranger Rick patch, too! It goes anywhere . . . on sweater . . . jeans . . . jacket . . . T-shirt. And it's washable because it won't shrink and the colors won't run.

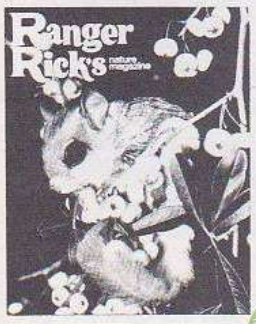
**39569GL Ranger Rick Patch.. $1.00**



**SONGBIRD PAINTABLES KIT.** Here's a really fun way to paint beautiful pictures. This set includes six 12" x 17" lifelike sketches of favorite songbirds all ready to paint . . . eight water colors . . . brush . . . suggested color guides. Ages 8 to adult. Get one for yourself and give one to a friend for Christmas!

**35027GL Songbird Paintables (Set of 6) ..... $3.00**

## Attention Nature Club Members!




Remember the *Ranger Rick* Christmas issue I told you about last month? Well — you're reading it right now! And isn't it great! Just look at all the neat articles and pictures!

You can still buy single issues of this magazine for only $1.00. Think how much fun your friends could have reading their very own Christmas issue of *Ranger Rick's Nature Magazine*. And you can buy the grown-ups on your shopping list the Christmas issue of beautiful *National Wildlife* magazine for just $1.50.

We will send you the copies you order in December along with special gift envelopes. Everyone who gets one of these great magazines will really enjoy it and thank you for giving them such a nice present long after the holidays are over.

44017GL Dec 75 *Ranger Rick's Nature Magazine* . . . $1.00
41403GL Dec/Jan 76 *National Wildlife* magazine . . . $1.50

BOOKS & NATURE RELATED ITEMS

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1412 16TH ST., N.W., WASHINGTON, D.C. 20036

# Ranger Rick Stocking Stuffers...

## *great to give or get!*

**CHASE AWAY WINTER'S CHILL!** This soft white sweatshirt would be a welcome gift any time of year, but especially in winter. It's really warm, but not so heavy that you think you're wrapped up in a blanket. Rick's picture and "Nature Club Member" are printed right on the front in bold colors that won't wash off or fade. The shirt is made from 95% cotton, so it can go right in the washer. Order by size and number, and allow for slight shrinkage.

**RANGER RICK SWEATSHIRT**

| | | |
|---|---|---|
| **30102GL** | **Sm. (6-8 yrs.)** | **$5.75** |
| **30111GL** | **Med. (9-12 yrs.)** | **$5.75** |
| **30120GL** | **Lg. (13-16 yrs.)** | **$5.75** |

**EXTRA-SPECIAL JEWELRY!** Imagine the fun of finding your very own ring or pretty pendant tucked in the toe of your Christmas stocking! The bright brass ring has a blue enamel Rick and adjusts to fit all fingers. The 1¼" x 1¾" oval pendant shows a colorful Rick on a green and white background and hangs from a 22" chain. You can't buy this jewelry in any store, which makes it even better.

| | | |
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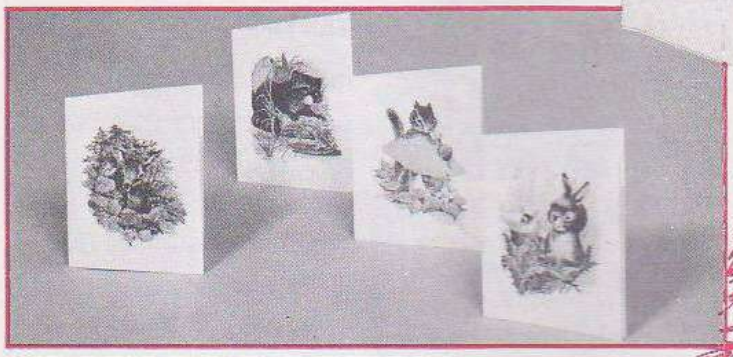
| **30611GL** | **Ranger Rick Ring** | **$2.00** |
| **30602GL** | **Ranger Rick Necklace** | **$3.00** |



**GREAT FOR FARAWAY FRIENDS!** Raccoon and rabbit, fawn and chipmunk peep out at you from their woodland homes on this fanciful, fun-to-use notepaper. Think how happy your buddies will be to get a box of their very own stationery. And then when they write you a letter on it, you'll be even happier that you gave them the gift! 16 French-fold notes per box (4 each of 4 designs), envelopes included; 3½" x 4½".

**09387GL Animal Whimsey Notes ..... $1.00**

**START A COLLECTION FOR A FRIEND!** Now here's a gift that can be large or little, because you can give one statue or a whole set. Each little figure is about 2½" tall and sits on a 2¾" x 1¾" wooden base (facts on the bottoms of the bases add to the fun). The animals are made from silver hydrostone — which looks and feels just like real pewter. Pick out your favorites, or give 'em all.

| | | | |
|---|---|---|---|
| **A.** | **35714GL** | **Bison** | **$2.75** |
| **B.** | **35705GL** | **Grizzly Bear** | **$2.75** |
| **C.** | **35732GL** | **Mountain Lion** | **$2.75** |
| **D.** | **35723GL** | **Black-tailed Prairie Dog** | **$2.75** |
| | **35769GL** | **Set of Four (Bison, Prairie Dog, Mountain Lion, Grizzly Bear) — save $1.00!** | **$10.00** |
| **E.** | **35689GL** | **Timber Wolf** | **$2.75** |
| **F.** | **35670GL** | **Brown Pelican** | **$2.75** |
| **G.** | **35661GL** | **Black-footed Ferret** | **$2.75** |
| **H.** | **35652GL** | **Bald Eagle** | **$2.75** |
| | **35698GL** | **Set of Four (Wolf, Pelican, Ferret, Eagle) — save $1.00!** | **$10.00** |

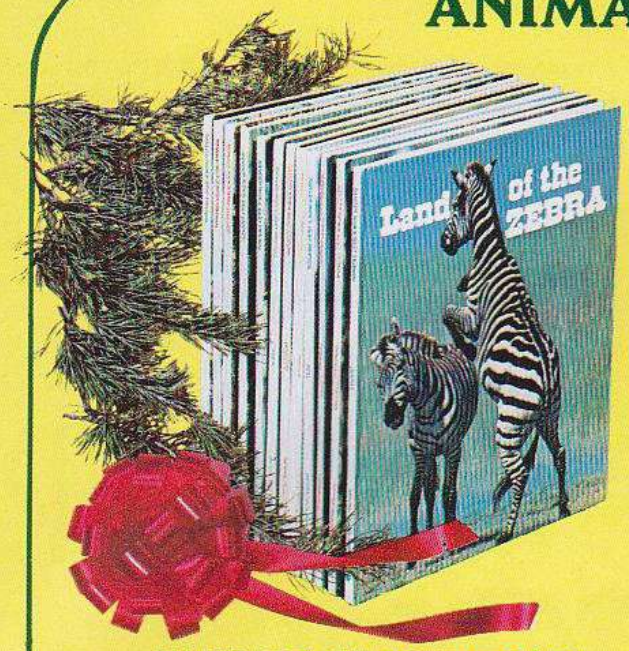
**AND FOR QUICK NOTES OR THANK YOU'S,** you can't beat these useful, jumbo-sized post cards. Just jot down what you want to say and drop one in the mail — you don't even need an envelope! And you can use them as a neat little gift when you want to give someone more than a Christmas card. The beautiful "Christmas Song" painting is by famous wildlife artist Charles Fracé. 50 cards per pack, 4" x 7".

**12113GL "Christmas Song" Jumbo Postcards $2.50**

**THEY CAN USE IT EVERY DAY!** Here's a nifty idea for hard-to-shop-for folks and friends who love nature. This calendar is new and different — 52 full-color pages of beautiful Wildlife Stamp art. Plus there are 52 week-by-week pages of roomy appointment blocks, and 8 more pages of information on the Federation. 112 pages in all. And everyone who gets one of these calendars will thank you for it all year! 7" x 8½".

**36044GL Wildlife Heritage Engagement Calendar.. $3.75**

# THIS CHRISTMAS DISCOVER EXCITING ANIMAL BOOKS FOR CHILDREN




*Published by the National Wildlife Federation.*

Here are twelve of the brightest, happiest animal books ever, for you and your parents to give this Christmas! Thirty-two pages per book of facts and fun information will answer lots of questions about the animal world. Each exciting volume is filled with spectacular color photos, amazing facts, and thrilling tales of animals growing up in the wild. You will see where the animals live . . . how they grow and change with the seasons . . . their close relatives . . . and much more. And, best of all, each enthralling book is fun to read, easy to understand, delightful to look at, and great to share with your family and friends. Order them in sets of four books each (and save money) or pick your favorite individual titles. They'll be welcome gifts—or the perfect way to start your own nature library.

**EACH SET OF FOUR BOOKS**

**ONLY $8.50**

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*Published by, and only available through the National Wildlife Federation.*

**Each beautiful book features . . .**

- Range Maps showing where the animal lives
- "Amazing Facts" about the animal
- Cousins—introducing closely related animals
- Large 8½" x 10" size
- 32 glossy pages
- Colorful hardbound covers

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| 19116GL | Land of the Zebra | $2.50 |
| 19081GL | Chimps and Baboons | $2.50 |

**ORDER TODAY FOR CHRISTMAS GIVING!**

**An icy wind swirls through the treetops.
Snow begins to cover the frozen ground.
It is a time of little food
and bitter cold for many creatures.
How do they survive . . .**

# WHEN WINTER COMES

by Bob Gray

One way animals survive the winter is to go into a very deep sleep that lasts through the wintertime. This is called hibernation.

Many kinds of ladybird beetles (also called ladybugs) gather in huge clumps in sheltered places to hibernate. Most adult insects, such as moths, grasshoppers and praying mantises, die before winter arrives. But they leave behind hibernating offspring—eggs, nymphs, larvae or pupae. And certain kinds of bees leave behind very important adults, the queens, which will lay next year's eggs.

Almost all cold-blooded creatures hibernate. Frogs and many toads burrow into the mud. Some species of rattlesnakes clump together in a big ball inside a den. Sometimes the outer snakes freeze to death, but those inside the clump survive. Most freshwater pond fish—eels and bass, for instance—hibernate.

Mammals such as groundhogs and bats hibernate in burrows or caves where the air is warmer than outside. The hibernating animal's body temperature drops almost to freezing. Its breathing and heartbeat slow down. It is nourished by the fat it has stored in its body. Only one species of bird hibernates. It is the American nightjar, also called poorwill, of the western United States.

Many people think that bears hibernate; but their body temperature stays almost normal and they can be wakened easily. They are just asleep, not hibernating. Bear cubs are born during the long winter sleep.

*Please turn the page*

Many kinds of animals stay active year-round. Trout, pike and other cold-water fish go through the winter with hardly any changes. But other animals must prepare for the cold. Deer, grouse and other warm-blooded animals build up layers of fat on their bodies. Squirrels store nuts. Beavers stick twigs and branches into the mud at the bottom of their ponds. These will provide snacks all through the winter. Pikas, small rabbits of the western mountains, store food piles of dried grass.

Other animals change their diets. Cardinals give up their insect diet and eat mostly seeds. Cottontail rabbits nibble twigs instead of juicy leaves.

Many mammals grow an extra coat of fur which protects them from the cold. Deer grow extra hollow hairs which do a great job of keeping them warm. Musk oxen grow a long, shaggy coat of hair over their soft undercoat. The long hair protects them from rain and snow, and the undercoat helps to hold in body heat.

Birds keep in their body heat by fluffing out their feathers to make a thicker coat. Ducks and geese have undercoats of soft down. Bobwhite quail sleep at night snuggled up in a tight, cozy circle.

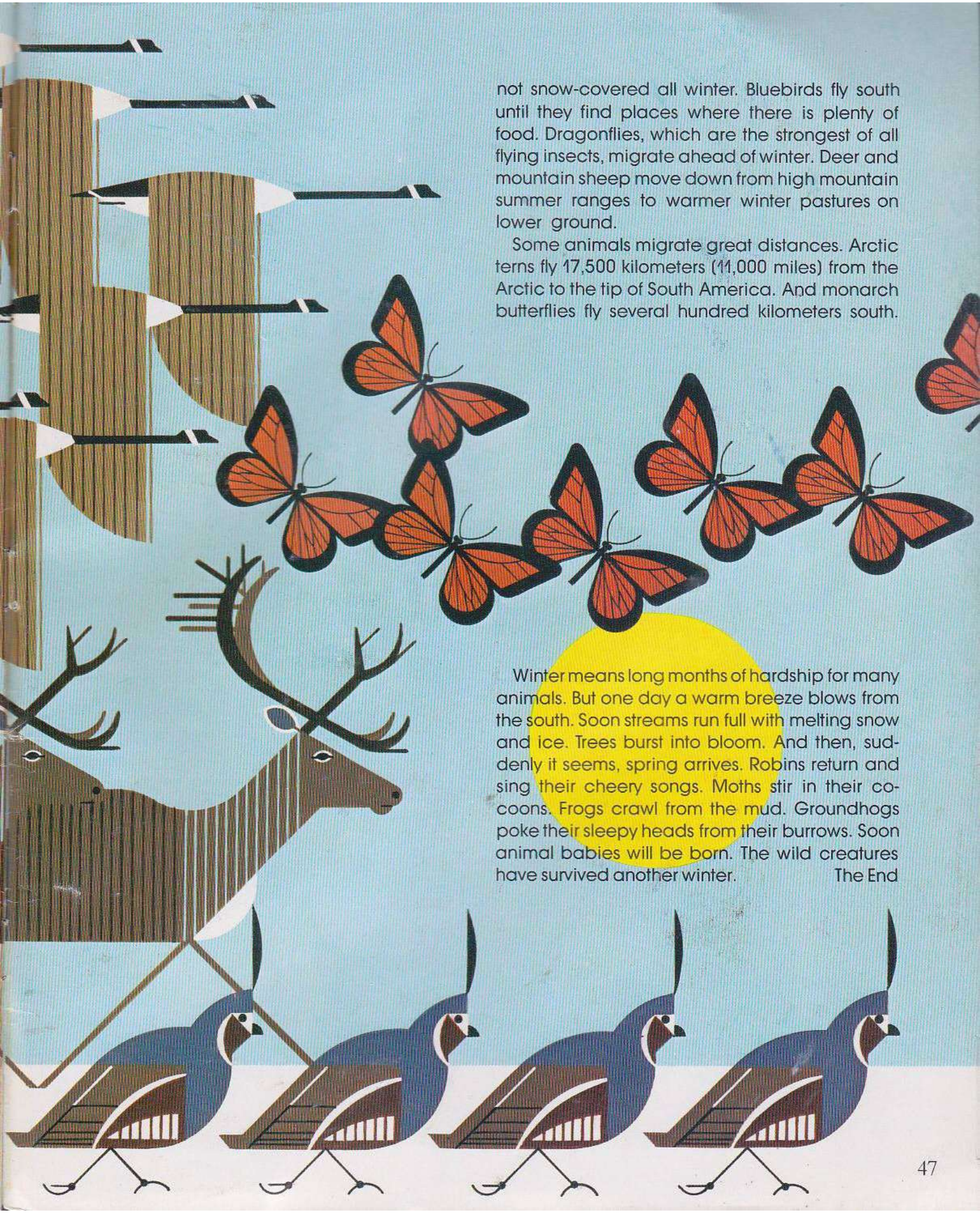
*Please turn the page*

Some animals survive winter by leaving the cold country—they **migrate**. Some make very short trips. Mountain quail walk downhill in single file to warmer valleys where they spend the winter. Certain fish, such as bluefish, migrate short distances to warmer water.

Other animals migrate a few hundred kilometers at most. Caribou of the Arctic move south from the tundra to find food and shelter in the forests. Canada geese fly south until they find water that doesn't freeze over and fields that are



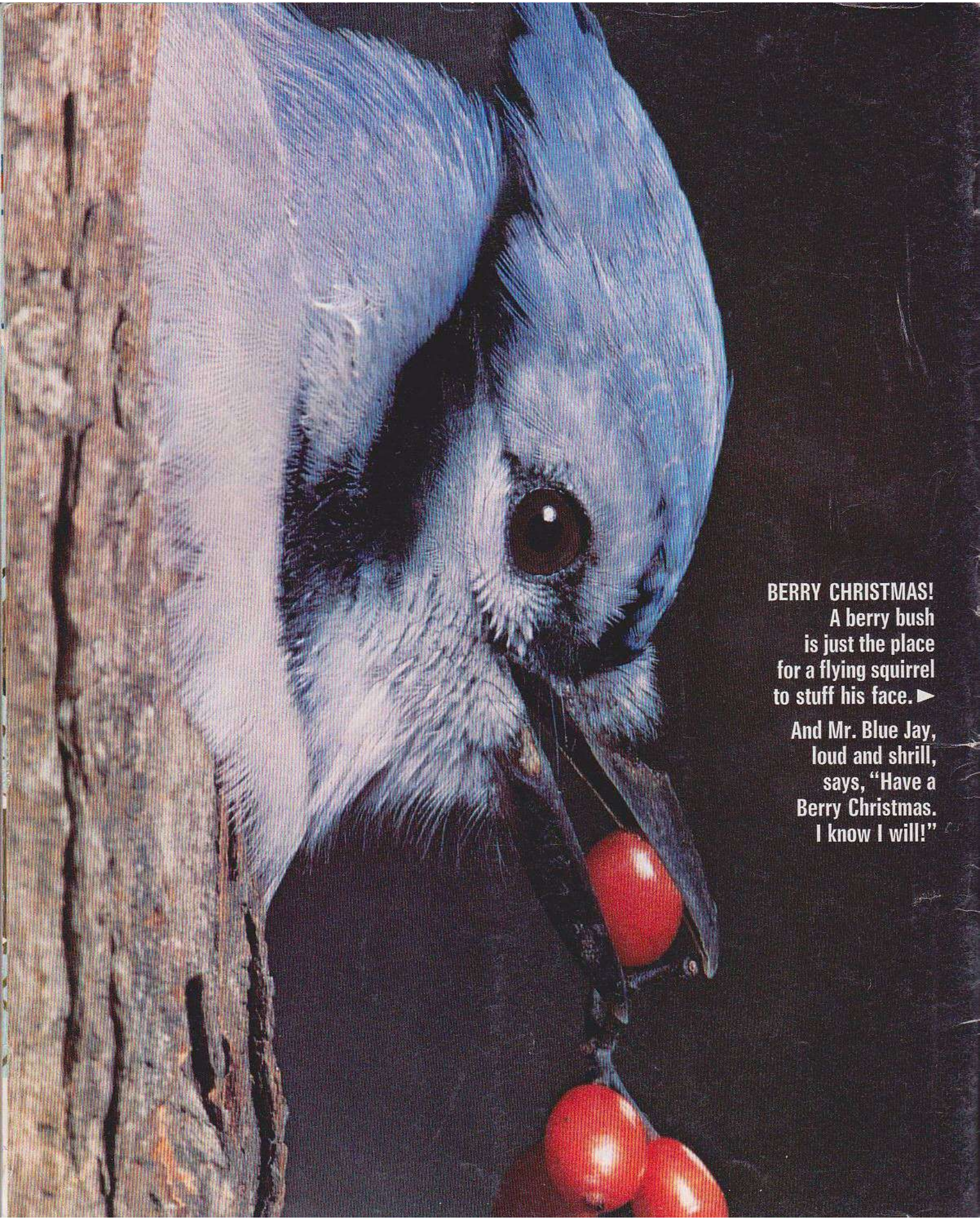
Drawings by Charles Harper



not snow-covered all winter. Bluebirds fly south until they find places where there is plenty of food. Dragonflies, which are the strongest of all flying insects, migrate ahead of winter. Deer and mountain sheep move down from high mountain summer ranges to warmer winter pastures on lower ground.

Some animals migrate great distances. Arctic terns fly 17,500 kilometers (11,000 miles) from the Arctic to the tip of South America. And monarch butterflies fly several hundred kilometers south.

Winter means long months of hardship for many animals. But one day a warm breeze blows from the south. Soon streams run full with melting snow and ice. Trees burst into bloom. And then, suddenly it seems, spring arrives. Robins return and sing their cheery songs. Moths stir in their cocoons. Frogs crawl from the mud. Groundhogs poke their sleepy heads from their burrows. Soon animal babies will be born. The wild creatures have survived another winter. The End



BERRY CHRISTMAS!
A berry bush
is just the place
for a flying squirrel
to stuff his face. ►

And Mr. Blue Jay,
loud and shrill,
says, "Have a
Berry Christmas.
I know I will!"